



Survey

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Survey of Sport Fishing in Canada 1985

Summaries of survey
results for provinces
and territories



Fisheries
and Oceans

Pêches
et Océans

Canada



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SPORT FISHING IN CANADA, 1985

Introduction

The 1985 Survey of Sport Fishing in Canada collected information about sport fishing in Canada in 1985 to assess the economic and social importance of recreational fisheries to the country. The survey was conducted by the Surveys Unit of the Economic and Commercial Analysis Directorate at the Department of Fisheries and Oceans headquarters in Ottawa, in cooperation with all provincial and territorial fisheries and licensing agencies.

The component provincial and territorial surveys are part of a nationally co-ordinated study conducted at five year intervals to provide data on a wide variety of topics of interest to fisheries managers at the various levels of government. The results of these surveys provide the most authoritative and up-to-date information on activity and harvest in our recreational fisheries. As well, they provide the only detailed information on the economic dimensions of the recreational fisheries in all regions of the country.

Once aggregated, the results of the surveys form the base of information used to provide managers and researchers with nation-wide data. This base is used to assess changes with respect to pressure on

fisheries resources as well as to determine the economic contribution made by anglers at both the regional and national levels.

The 1985 survey was the third in the series of surveys begun in 1975. Highlights from both previous surveys, conducted in 1975 and 1980, were reported in bulletins published under the titles "Sportfishing in Canada in 1975" and "Sportfishing in Canada, 1980".

This bulletin presents the highlights of the aggregated results from the 1985 surveys. Information for each province and territory and for Pacific tidal waters have been prepared in a similar format to this report. Copies are available from either the Department of Fisheries and Oceans or from the offices of the fisheries licensing agency of the jurisdiction of interest.

Survey Methodology

Due to the diverse nature of licensing practices in Canada, the methodology used in each jurisdiction is customized to fully utilize the available base of information on the angling population. All jurisdic-

tions in Canada require that their nonresident anglers hold a licence. Although these bases differ in terms of licensing age requirements, all samples for nonresident anglers are selected using these records.

The procedures used for resident sampling is somewhat more complicated. For the majority of jurisdictions, the licence bases are used for sampling purposes despite minor variations with respect to differences in licensing ages. For the few jurisdictions where residents did not require a licence or where regulations severely limited the numbers of anglers covered, random samples of households were selected using the most current listing available. In the three provinces where this approach was used, households were pre-screened, using a telephone interview, to identify anglers within the selected households. An angler was then selected at random from those identified to complete a questionnaire. All information is collected using a mail survey approach.

In 1985, sixty two percent of those anglers who had been sent questionnaires responded. Response rates varied from one jurisdiction to another with a high of 75 percent to a low of 49 percent. All returns were processed and analysed by the

Surveys Unit. Preliminary results were fully completed by October 1986 and final results were available to all participating agencies by February 1987. The results from the core group of common questions have been aggregated for use in this report after careful analysis of the results in each jurisdiction. Prior to inclusion in this report, results were carefully assessed to ensure that they reflected, as well as could be determined, the characteristics of angling in 1985 in each jurisdiction.

The Resource Base

Canada is the second largest country in the world encompassing an area of almost 10 million square kilometres. Within this vast geographical area are some of the finest freshwater fisheries in the world. Covering an area greater than 750,000 square kilometres, our lakes, rivers and streams provide anglers with virtually unlimited angling opportunities.

In addition to this freshwater area, Canada has a coastline of over 240,000 kilometres bordering on three oceans. Except for the local population, the Arctic Ocean coast offers limited fishing opportunities due to the relatively limited season

available to anglers as well as the considerable distances they are required to travel. Fishing activity on the Atlantic Ocean is somewhat restricted despite the wide range of fish species available to anglers. The Pacific Ocean fisheries, on the other hand, are extremely popular with both resident and nonresident anglers.

A total of 950 species occur in Canada's fresh and ocean waters, of which fewer than 75 are of primary interest to anglers. The main species taken are northern pike, walleye, six species of trout, perch and four species of bass. Smelt are taken in large numbers in eastern areas of the country.

While the above species are leaders with respect to the numbers of fish taken across the country, regional fishing opportunities are very much influenced by the species available to anglers. In the Atlantic region of the country, anglers pursue various saltwater species such as cod, mackerel and striped bass. The Atlantic tomcod is fished extensively in the winter ice fisheries. In fresh water, brook trout are the favoured species of anglers. However, the species which is the epitome of 'the angling experience' is the Atlantic salmon, found in many areas of the

Maritime provinces and Quebec.

In Quebec, trout are the predominant species fished, although walleye, northern pike and perch are also taken in large numbers. Ontario, bordered in large part by the Great Lake system, and with easy access to thousands of lakes both in its southern and northern regions, offers anglers what is perhaps the widest range of species in the country. Perch and smelt are taken in large numbers as are walleye, bass and pike. For a small group of avid anglers, muskellunge holds a particular allure. For another relatively large group, panfish is their main pursuit.

Across the prairies (Manitoba, Saskatchewan and Alberta), pike and walleye are the predominant species although the trout and whitefish harvests in Alberta are relatively large. This area also has Arctic grayling in its northern areas as well as goldeye in limited numbers.

In British Columbia, salmonids are the predominant species in both fresh and ocean waters. In freshwater, trout are taken in large numbers. Freshwater salmon and kokanee are also very popular. Steelhead, a sea-going rainbow trout, is popular with a limited number of adventuresome anglers. In ocean waters,

Table 1. Numbers and characteristics of anglers in Canada in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Adult Angling Population (a)	4,191,874	184,355	794,935	5,171,164
Active Adult Anglers				
Males	2,926,836	149,086	638,180	3,714,102
(Average Age, Years)	39	42	46	41
Females	1,053,977	27,925	137,540	1,219,442
(Average Age, Years)	37	40	46	39
Total	3,980,813	177,011	775,720	4,933,544
Other Anglers (b)	1,419,340	47,308	140,374	1,607,022
Total Active Anglers (All Ages)	5,400,153	224,319	916,094	6,540,566

- (a) Individuals who purchased an angling licence in Canada or adults who fished in a jurisdiction where no licence was required. This group provides the basis for the statistical information presented in this bulletin.
- (b) Individuals under 16 years of age, or those anglers not requiring a licence in licensing jurisdictions.
- (c) Canadians who fished outside their home province or territory.

chinook, coho and pink salmon are the most popular species.

In the Yukon and Northwest Territories, lake trout and pike are the main species harvested. Arctic grayling are also sought by anglers in this area, while walleye and Arctic charr are popular among anglers in the Northwest Territories. Charr are taken primarily in the coastal charr fisheries by those anglers who are able to take advantage of the fly-in operations available on a limited basis.

The above brief sketch of the resource and angling opportunities in Canada demonstrates the variety of species and range of experiences available to the angler.

Angler Profile

There were over 6.5 million active anglers in Canada in 1985 (Table 1). Of these anglers, 5.4 million were resident anglers (anglers who live in Canada and who fished in their home province/territory). The majority of these resident anglers were concentrated in Ontario and Quebec (Table 2), however, the participation rate, that is the proportion of population taking part in sport fishing, was highest in the Yukon, Ontario, Newfoundland, New Brunswick and the Northwest Territories. Additionally, over 220,000 nonresident Canadian anglers (persons who live in the country but who fished outside their home jurisdiction) and over 900,000 other nonresidents (persons who live outside Canada but fished in the country) actively fished in 1985.

Anglers under 16, and those under the legal licensing age in certain provinces, made up approximately 24% of total angler numbers. It is probable that the number of anglers under 16 years of age is underestimated because the survey covered, for the most part, only those households with at least one licensed adult angler. Visitors, including those 224,319 Canadians who fished outside their home provinces, made up 17% of the total angler population. Seventy-four percent of resident active adult anglers, eighty-four per-

Table 2. Participation of active resident anglers by jurisdiction in Canada in 1985.

Jurisdiction	Number of Anglers	Participation Rate (%)	Percentage of Total (%)
B.C. Tidal Water	280,835	9.7	5.2
B.C. Freshwater	331,775	11.5	6.1
Alberta	417,435	17.7	7.7
Saskatchewan	195,886	19.2	3.6
Manitoba	191,979	18.0	3.6
Ontario	2,328,192	25.7	43.1
Quebec	1,204,593	18.3	22.3
New Brunswick	156,873	21.8	2.9
Nova Scotia	99,554	11.3	1.8
Prince Edward Island	15,095	11.9	0.3
Newfoundland	159,510	27.5	3.0
Yukon	7,431	32.4	0.2
Northwest Territories	10,995	21.6	0.2
Total	5,400,153	21.3	100.0

cent of Canadian nonresidents and eighty-two percent of all non-Canadian active adult anglers were male (Figure 1).

Approximately 81% of nonresident anglers were foreigners, mainly Americans coming to Canada from the East North Central, West North Central and Mid-Atlantic census regions of the United States. The remaining 19% were Canadians who fished outside their home provinces (Table 3, Figure 2).

Fishing Effort

Sport fishing in Canada is a major recreational activity. Close to one in every five Canadians fished in 1985, and one out of every seven anglers was a visitor to this country.

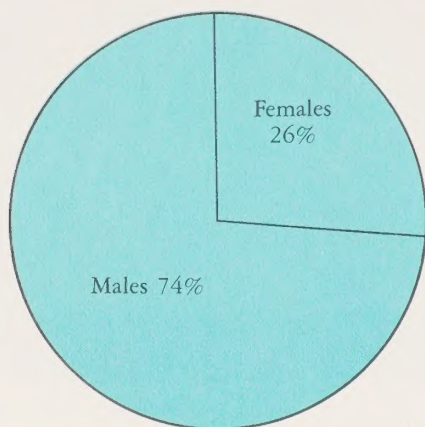
Anglers fished a total of approximately 74 million days in Canada in 1985 (Table 4). Eighty-nine percent of this effort was expended by Canadian anglers fishing within their respective jurisdictions, while only 2%

Table 3. Origin of nonresident licensed anglers in Canada in 1985.

Province-State Census Group	Number
Canadian	
Maritimes	4,912
Quebec	8,310
Ontario	55,028
Prairies	106,796
Pacific	8,733
Territories	576
Canadian Total	184,355
Non-Canadian	
New England	11,487
Mid Atlantic	143,557
East North Central	302,653
West North Central	164,859
Mountain	26,077
Pacific	89,600
South Atlantic	28,173
East South Central	8,378
West South Central	14,939
Other U.S.A.	2,961
Other	2,251
Non-Canadian Total	794,935
Grand Total	979,290

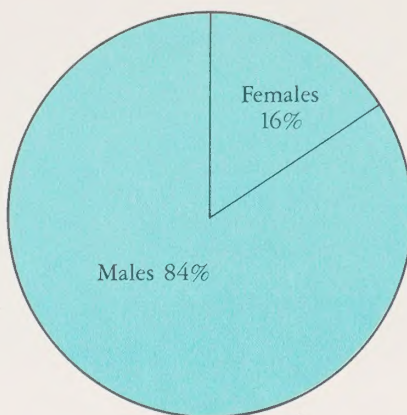
Fig. 1. Sex composition of active anglers.

A) Resident



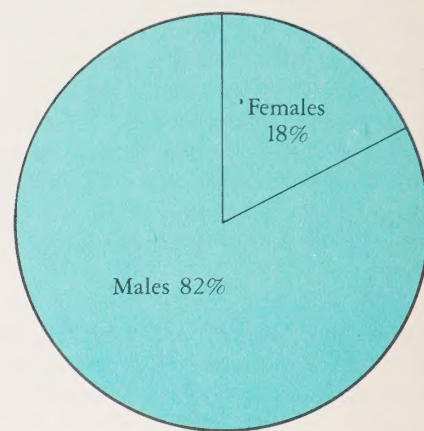
3,980,813 active anglers

B) Nonresident Canadians



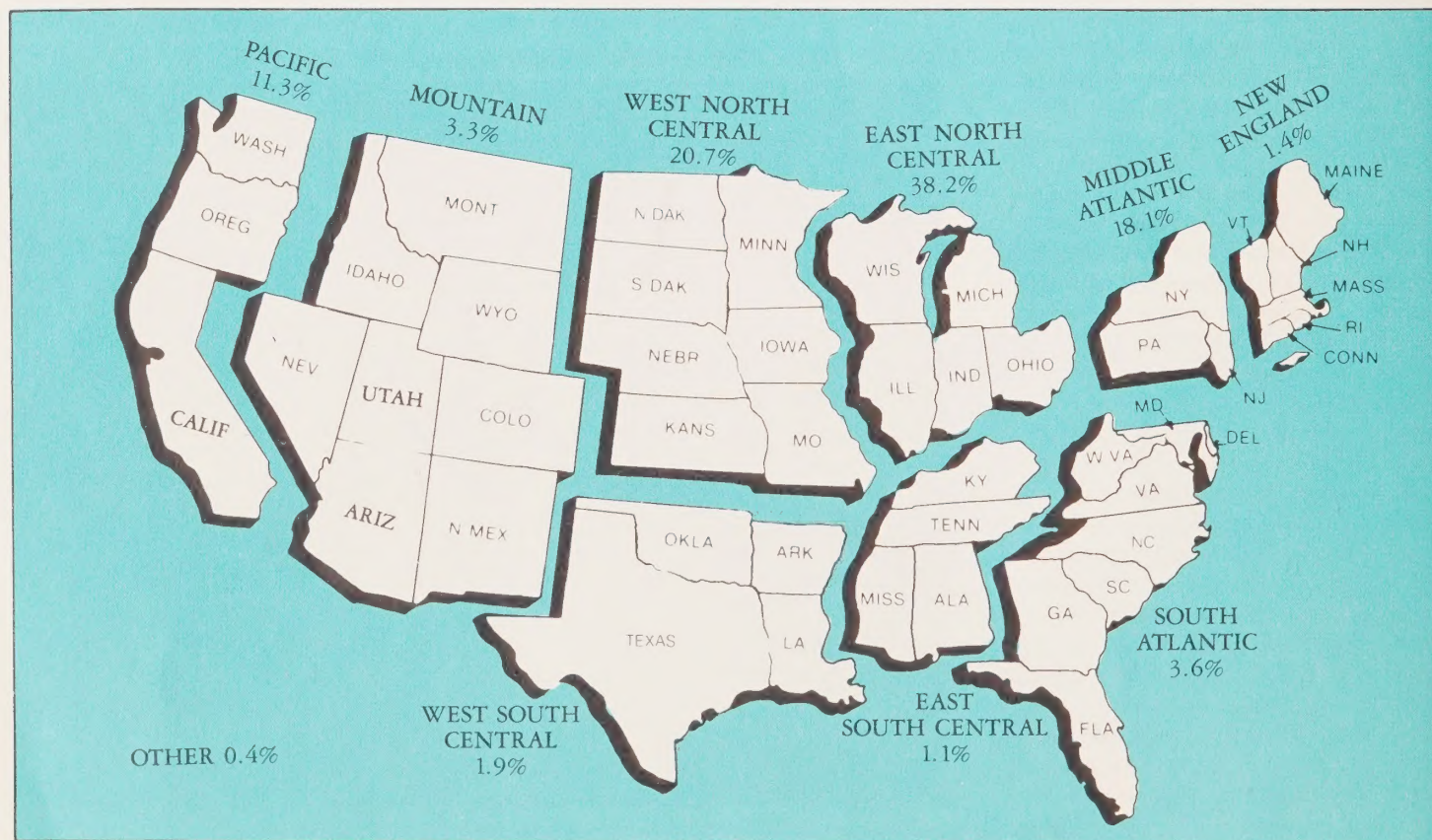
177,011 active anglers

C) Nonresident Other



775,720 active anglers.

Fig. 2. Regional distribution of United States residents who held Canadian angling licences in 1985.



of this effort was expended by Canadians visiting other provinces and 9% by other nonresident anglers visiting Canada. Resident anglers fished an average of 17 days, while nonresident Canadians and visiting nonresidents fished an average of 8 days each. Most of this fishing pressure (94%) took place in freshwater.

Harvest

In 1985, anglers caught an estimated 330 million fish of all species and retained over 230 million of them (Tables 5 and 6). The total weight of fish kept by anglers was in excess of 100 thousand tonnes (239.6 million pounds). Resident anglers caught almost 90% of the fish harvested in 1985 and they took, on average almost 52 fish each. Nonresident Canadians harvested slightly over 14 fish each in other jurisdictions, while visiting foreign anglers retained almost 28 fish each.

In terms of species harvested, trout accounted for 25% of all fish retained, followed by perch (22%), smelt (9%), pike (7%), and bass (4%) (Figure 3).

On average, anglers retained 70% of the fish they caught (Table 7). Resident anglers kept 74% of the fish they caught; nonresident Canadians, 59%; and other nonresidents, 44%. In general, anglers kept a higher proportion of smelt (92%), mackerel (91%), kokanee (83%) and trout (81%) than any other species caught.

Preferences

Species preferences provided by anglers have been grouped into the eleven categories shown in Table 8. Species preference varies dramatically across the country depending upon the availability of particular species. From a Canada-wide perspective, however, it can be seen, trout of all species topped the list at 31.5% followed by walleye at 21.9%. Canadian anglers showed some variations in their preferences, depending upon whether they were residents or visitors, particularly with respect to bass, salmon and perch. Anglers

Table 4. Angling effort (in angler days) in freshwater and saltwater in Canada in 1985.

Waters	Resident	Nonresident		Total
		Canadian	Other	
Freshwater	61,960,621	1,363,686	5,989,640	69,313,947
Saltwater	4,230,668	93,022	348,828	4,672,518
Total	66,191,289	1,456,708	6,338,468	73,986,465
Average Days Fished	16.6	8.2	8.2	15.0

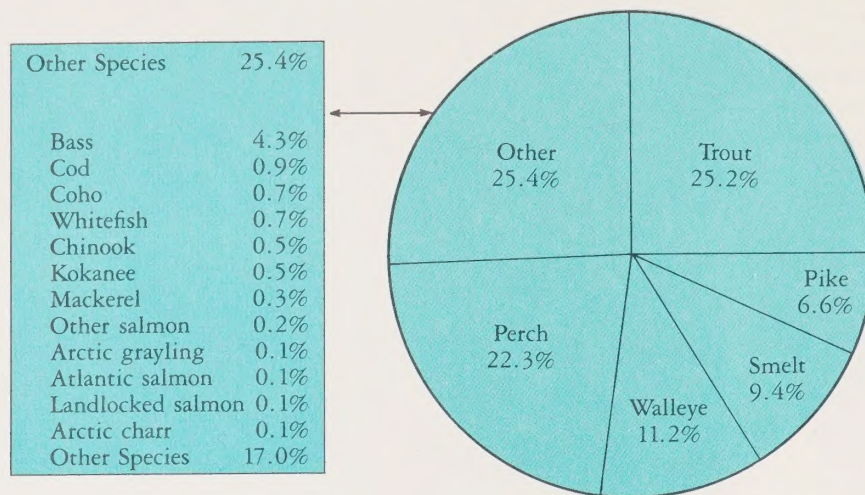
Table 5. Fish caught, by species, in Canada in 1985.

Species	Resident	Nonresident		Total
		Canadian	Other	
Arctic charr	41,425	18,054	7,824	67,303
Arctic grayling	471,813	85,367	102,312	659,492
Atlantic salmon	212,539	10,451	24,585	247,575
Bass	17,737,763	189,478	5,054,144	22,981,385
Chinook	1,778,223	36,019	140,078	1,954,320
Cod	2,399,034	3,590	2,967	2,405,591
Coho	1,890,318	67,734	331,412	2,289,464
Other salmon	437,474	20,278	37,424	495,176
Kokanee	1,172,148	126,796	61,297	1,360,241
Landlocked salmon	413,164	5,788	19,857	438,809
Mackerel	819,330	4,682	2,491	826,503
Perch	60,398,015	421,991	8,237,310	69,057,316
Pike	22,001,900	863,715	10,571,387	33,437,002
Smelt	22,768,388	2,174	626,310	23,396,872
Trout	68,260,727	952,166	1,880,584	71,093,477
Walleye	25,731,101	1,101,122	13,674,049	40,506,272
Whitefish	2,096,901	11,361	121,066	2,229,328
Other	48,504,107	365,147	7,805,057	56,674,311
Total	277,134,370	4,285,913	48,700,154	330,120,437

Table 6. Fish retained, by species, in Canada in 1985.

Species	Resident	Nonresident		Total
		Canadian	Other	
Arctic charr	29,795	6,287	1,549	37,631
Arctic grayling	249,077	21,340	23,923	294,340
Atlantic salmon	145,894	6,618	12,407	164,919
Bass	8,059,981	109,789	1,741,413	9,911,183
Chinook	959,397	27,978	102,410	1,089,785
Cod	2,175,779	3,181	2,620	2,181,580
Coho	1,330,405	56,123	272,702	1,659,230
Other salmon	311,467	10,404	25,580	347,451
Kokanee	992,946	99,082	38,541	1,130,569
Landlocked salmon	273,226	4,335	14,428	291,989
Mackerel	746,338	4,020	2,347	752,705
Perch	46,265,170	206,490	4,772,808	51,244,468
Pike	11,985,455	372,561	2,735,109	15,093,125
Smelt	20,993,126	2,081	619,050	21,614,257
Trout	56,336,461	640,131	877,231	57,853,823
Walleye	19,236,953	780,054	5,764,868	25,781,875
Whitefish	1,454,254	8,583	71,093	1,533,930
Other	34,580,509	164,332	4,281,746	39,026,587
Total	206,126,233	2,523,389	21,359,825	230,009,447
Weight of Fish Retained (lbs)	201,089,792	5,238,935	33,283,600	239,612,327
Weight of Fish Eaten (lbs)	160,781,306	4,442,695	28,682,579	193,906,580
% Eaten	80.0%	84.8%	86.2%	80.9%

Fig. 3. Proportion of fish (by number) retained by anglers in Canada in 1985.



from outside Canada, however, showed a decided shift in preferences, with walleye being the most preferred (32.2%), followed by northern pike (21.5%) and bass (15.4%).

Motivations

Anglers were asked to rate the importance of various factors with respect to their enjoyment of a day of fishing (Table 9). In order to assess the various factors in terms of overall impact, factors were weighted according to whether they were very important (a weight of two) or important (a weight of one). The results were then aggregated and ranked according to the proportions found for each factor across the total value of responses derived from the weighting procedure.

Quality of water and beauty of surroundings were considered factors most influencing the enjoyment of a day of fishing. For all anglers, catch as a source of food was considered the least important factor influencing their enjoyment of fishing.

The number and size of fish caught, while individually low in terms of importance, might be considered important to many anglers if the two were ranked together. Overall, however, environmental factors and factors related to the anglers personal well-being (escape from routine and privacy) ranked as the most influential factors for their enjoyment of the sport.

Table 7. Proportion of fish retained, by species, in Canada in 1985.

Species	Resident	Nonresident		Total
		Canadian	Other	
	%	%	%	%
Arctic charr	72	35	20	60
Arctic grayling	53	25	23	45
Atlantic salmon	69	63	50	67
Bass	45	58	34	43
Chinook	54	78	73	56
Cod	91	89	88	91
Coho	70	83	82	72
Other salmon	71	51	68	70
Kokanee	85	78	63	83
Landlocked salmon	66	75	73	35
Mackerel	91	86	94	91
Perch	77	49	58	74
Pike	54	43	26	45
Smelt	92	96	99	92
Trout	83	67	47	81
Walleye	75	71	42	64
Whitefish	69	76	59	69
Other	71	45	55	69
Total	74	59	44	70

Table 8. Distribution of fish species preference indicated by anglers in Canada in 1985.

Species	Resident	Nonresident		Total
		Canadian	Other	
	%	%	%	%
Trout	35.3	34.8	12.0	31.5
Walleye	19.8	22.2	32.2	21.9
Northern pike	9.0	9.2	21.5	11.0
Bass	10.3	3.8	15.4	10.7
Salmon	8.9	16.0	7.4	8.8
Perch	5.4	2.8	3.9	5.1
Maskinonge	1.0	0.5	2.4	1.2
Whitefish	1.0	0.7	0.3	0.9
Kokanee	0.8	2.4	0.4	0.8
Other freshwater fish	5.8	6.4	2.9	5.6
Other saltwater fish	2.7	1.2	1.6	2.5

Table 9. Relative importance of factors affecting fishing enjoyment in Canada in 1985.

Factors	Ranking Score			
	Resident	Nonresident		Total
		Canadian	Other	
1. Quality of Water	13.8	14.1	12.8	13.7
2. Beauty of Surroundings	13.0	14.2	12.9	13.0
3. Escape Routine	11.0	11.8	11.1	11.1
4. Weather Conditions	11.0	10.3	9.4	10.7
5. Access to Wilderness	9.1	10.0	8.6	9.1
6. Privacy	8.6	9.1	9.5	8.8
7. Catch Species Desired	7.5	7.8	8.8	7.7
8. Angling for Wild Fish	7.8	6.6	7.3	7.7
9. Number of Fish Caught	6.6	6.8	8.7	7.0
10. Size of Fish Caught	6.6	6.6	8.0	6.9
11. Catch as a Source of Food	4.9	2.7	3.0	4.5

Nonresident Trip Characteristics

Nonresident anglers made a total of 3.2 million trips in Canada for all reasons and fished on 68% of these, or 2.2 million trips (Table 10). Nonresident Canadians fished on only 47% of their trips to

other jurisdictions, while visitors to Canada fished on 78% of their trips.

A total of 13.3 million days were spent in all jurisdictions by nonresident anglers. They fished in all jurisdictions for 7.8 million of these days (59%), with nonresidents of Canada accounting for 6.3 million of

the days and Canadian nonresidents for 1.5 million. Day trips for fishing accounted for over 36% of all fishing trips in 1985, with nonresidents of Canada having a proportionately higher percentage of day trips than Canadians visiting other jurisdictions.

Table 10. Trip characteristics of nonresident anglers in Canada in 1985.

Characteristics	Nonresident Canadians	Nonresident Other	Total
Trips – All Reasons	1,094,591	2,154,313	3,248,904
Fishing Trips	514,173	1,686,055	2,200,228
– %	47	78	68
Days Spent for All Reasons	4,097,744	9,168,873	13,266,617
Days Fished	1,456,708	6,338,468	7,795,176
– %	36	69	59
Fishing Trips – Main Reason	276,026	1,454,460	1,730,486
Secondary Reason	177,337	202,288	379,625
Decided Upon After Arrival	60,810	29,307	90,117
Day Trips for Fishing	116,098	685,003	801,101
Overnight Trips for Fishing	398,175	1,001,052	1,399,227
Accommodation Used on Overnight Trips (% of nights)			
Friends and Relatives, Cottage	51.4	25.7	31.7
Campgrounds	14.1	17.1	16.4
Camping in Provincial Parks	6.4	5.0	5.3
Camping on Crown Land	2.0	2.5	2.4
Fishing Lodge, Camps, Outfitters	8.0	31.6	26.1
Other Commercial Accommodation	9.4	13.5	12.6
Other Accommodation	8.7	4.6	5.5
Total Nights Spent on Fishing Trips	1,969,942	6,491,863	8,461,805

The accommodations used on trips by nonresidents underline the differences between Canadian and other nonresidents. For Canadians, over 50% of all nights spent on fishing trips were with friends and relatives or at a cottage, while for anglers from outside Canada, fishing lodges, camps and outfitters were the main type of accommodation used, followed by friends and relatives. A total of 8.5 million nights were spent on overnight trips for fishing in 1985 with over 75% of these nights being spent by non-Canadian anglers.

Most nonresident anglers indicated that they would probably return to fish in the future in the jurisdiction covered (Table 11). The real difference in motivation, is apparent once the alternatives to fishing are examined.

While only 29% of nonresident Canadians indicated they would not have visited a particular jurisdiction had no fishing opportunities been available, almost 68% of foreign anglers indicated they would not have come at all (Table 12). Most Canadian nonresidents indicated they would have substituted other activities.

There was a similar distribution for both Canadian and other nonresidents in terms of rating their fishing experience (Table 13). The majority of both groups (approximately 32%) rated fishing as good. Nonresidents from outside Canada tended to rate a little more highly than visiting Canadians, however, the differences are not of major proportions. Overall, almost 39% of visiting anglers rated fishing better than good, while less than 30% felt it was fair or poor.

Expenditures and Investment

A considerable amount of economic activity is generated by those who go fishing as a recreational pursuit. While expenditures do not provide us with a measure of economic value of the fishery, they do indicate the diversity of the cost involved (See Table 14, Fig. 4).

Table 11. Projected future participation of active nonresident anglers in Canada in 1985.

Return	Nonresident Canadian	%	Nonresident Other	%
Yes	164,693	93.1	731,213	94.3
No	6,960	3.9	25,563	3.3
No Opinion	5,307	3.0	18,704	2.4

Table 12. Attitude of active nonresident anglers if no fishing opportunities existed in Canada in 1985.

Activity	Nonresident		Total
	Canadian	Other	
	%	%	%
Stayed Shorter Time	14.6	8.7	9.8
Substitute Other Activities	56.3	23.6	29.6
Not Come at All	29.1	67.7	60.6

Table 13. Attitude of active nonresident anglers on quality of fishing in Canada in 1985.

Rating	Nonresident		Total
	Canadian	Other	
	%	%	%
Excellent	11.1	13.7	13.2
Very Good	21.4	26.4	25.5
Good	31.9	31.7	31.7
Fair	22.2	17.8	18.6
Poor	13.4	10.4	11.0

In 1985, anglers spent almost \$2.5 billion on goods and services directly related to their angling activities. Resident anglers spent close to \$2 billion of this amount, or \$492 per angler. Nonresident anglers accounted for just over 21% of the total (\$530 million). Canadian nonresidents spent \$84.6 million, or \$478 per angler and other nonresidents totalled \$445.8 million, for an average of \$575 per angler.

Food, lodging and transportation accounted for 73.6% of expenditures made by resident anglers while for nonresident Canadians, these categories accounted for almost 66%. For visiting foreign anglers, these expenditures accounted for just over 52% of their total due to the impact of their greater use of package deals than Canadian residents. While these foreign nonresident anglers spent 32% of their direct expenditures on packages, resident anglers spent only 5% and nonresident Ca-

nadians, less than 20%. Fifty-four percent of package deal expenditures were made by non-Canadian anglers.

A component of major importance is the money anglers spend for durable goods in support of their sport fishing activities. In 1985, anglers invested over \$3.5 billion dollars in boats, motors, camping gear, special vehicles and other durable goods. Virtually all this investment was made by resident anglers who accounted for 96.5% of the total. Over one third of the monies invested in durable goods was spent on special vehicles such as ATVs, campers and other such vehicles which in recent years have become extremely popular with anglers. Residents indicated that 54% of their investment expenditures were directly related to sport fishing activities; nonresident Canadians, 61%; and, other nonresidents, 66%. (Tables 15 and 16, Figure 5).

Table 14. Expenditures directly attributable to sport fishing in Canada in 1985.

Expenditure	Resident	Nonresident		Total
		Canadian	Other	
	\$	\$	\$	\$
Food and lodging	730,299,950	33,632,202	161,415,356	925,347,508
Transportation	711,293,065	22,057,227	71,451,972	804,802,264
Fishing Services	76,918,918	5,873,068	46,893,456	129,685,442
Fishing Supplies	317,856,634	6,047,326	19,594,883	343,498,843
Packages*	107,506,283	16,309,990	143,725,215	267,541,488
Other	12,949,840	665,616	2,759,911	16,375,367
Total	1,956,824,690	84,585,429	445,840,793	2,487,250,912
Average per active angler	491.56	477.85	574.74	504.15

*Packages include fly-in, lodge, charterboat and outfitter costs.

Fig. 4. Proportion of expenditures attributable to sport fishing in Canada in 1985.

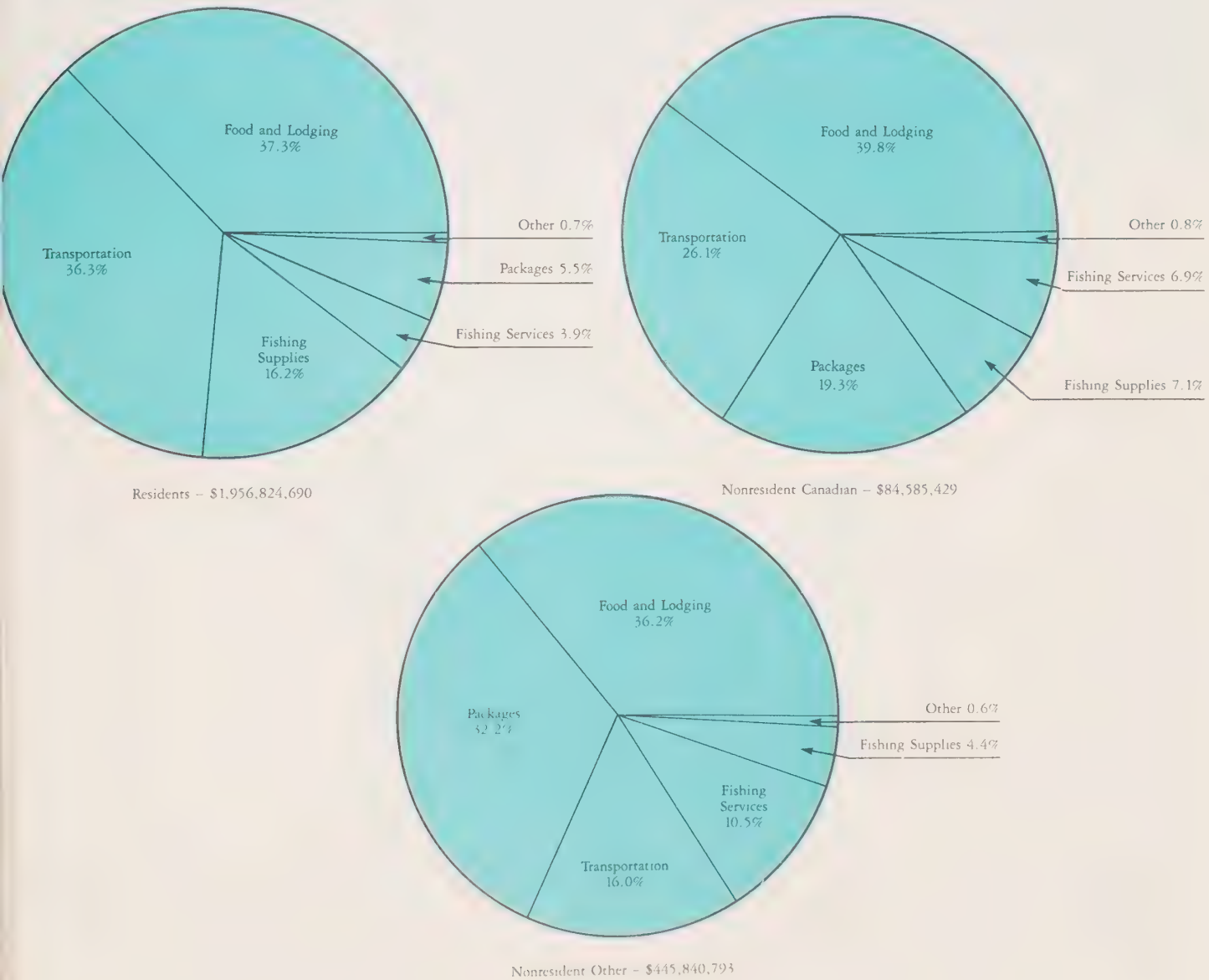


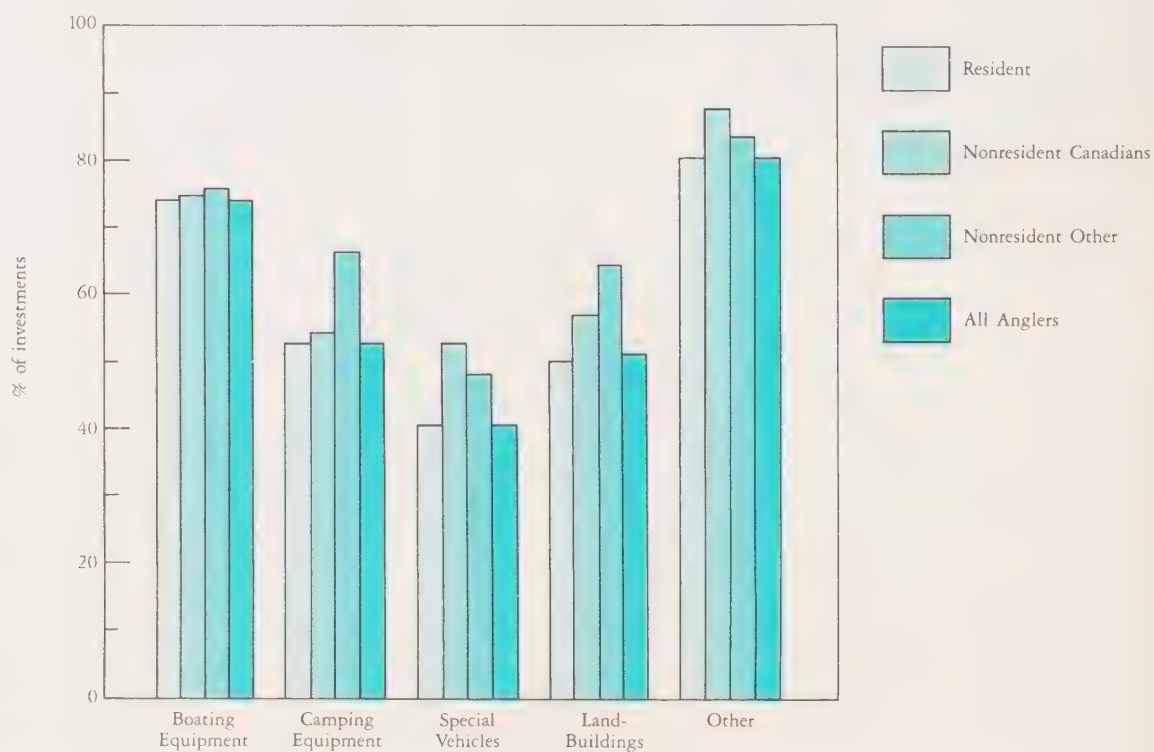
Table 15. Major purchases or investments attributable (in whole or in part) to sport fishing in Canada in 1985.

Purchase	Resident	Nonresident		Total
		Canadian	Other	
	\$	\$	\$	\$
Boating Equipment	926,644,824	10,511,131	14,421,466	951,577,421
Camping Equipment	463,323,444	8,902,926	3,121,217	475,347,587
Special Vehicles	1,171,434,707	4,825,104	4,984,071	1,181,243,882
Land-Buildings	780,847,532	23,542,878	50,973,653	855,364,063
Other	106,104,249	1,556,026	2,772,586	110,432,861
Total	3,448,354,756	49,338,065	76,272,993	3,573,965,814
Average per active angler	866.24	278.73	98.33	724.42

Table 16. Major purchases or investments wholly attributable to sport fishing in Canada in 1985.

Purchase	Resident	Nonresident		Total
		Canadian	Other	
	\$	\$	\$	\$
Boating Equipment	685,167,385	7,839,842	10,879,519	703,886,746
Camping Equipment	243,588,850	4,796,831	2,061,846	250,447,527
Special Vehicles	472,410,538	2,533,708	2,383,141	477,327,387
Land-Buildings	389,795,042	13,327,213	32,567,337	435,689,592
Other	85,017,837	1,358,525	2,311,766	88,688,128
Total	1,875,979,652	29,856,119	50,203,609	1,956,039,380
Average per active angler	471.26	168.67	64.72	396.48

Fig. 5. Proportion of purchases or investments made by anglers in Canada attributable to sport fishing in 1985.



Overall, anglers spent a total of \$6.1 billion on goods and services related in whole or in part to their angling activities in 1985. It is estimated that \$4.4 billion, or 73%, of these expenditures were directly related to their angling pursuits. These attributable expenditures represent an increase of 76% since 1980 (in constant 1980 dollars) and 152% in current dollars. It is recognized that estimates for investment may have increased disproportionately due to the coverage in items in 1985, however, increases of the magnitude found in the 1985 survey have been experienced in other recreational areas according to recent reports from Statistics Canada.

Willingness to Pay

Active anglers were asked "if your fishing costs had been higher in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?". Anglers across Canada were given choices from \$1.00 to \$100.00, with an additional category of "more than \$100.00" in our Pacific tidal fishery.

Twenty per cent of anglers chose not to answer the question. Of those who did, \$10 and \$20 per day were the most common responses, accounting for over 38% of all active anglers (Table 17). There were no significant shifts indicated across the three angler populations covered.

The average daily amount indicated by residents was \$17.31; by nonresident Canadians, \$16.42; and, by other nonresidents, \$15.51.

Conclusions

Based on other surveys of recreational-based activities, sport fishing ranks second after swimming. The results of the 1985 Survey of Sport Fishing in Canada con-

Table 17. Willingness of active anglers to pay additional costs for fishing in Canada in 1985.

Additional cost per day	Resident %	Nonresident		Total %
		Canadian %	Other %	
\$0.00	19.3	28.3	20.6	19.9
\$1.00	3.3	1.9	2.3	3.1
\$2.00	1.5	0.8	1.5	1.4
\$3.00	2.2	1.5	1.6	2.0
\$4.00	1.7	1.2	1.6	1.6
\$5.00	10.9	8.9	9.6	10.6
\$7.50	3.1	1.8	2.7	3.0
\$10.00	21.5	17.1	20.0	21.1
\$20.00	17.3	14.9	17.9	17.3
\$30.00	8.0	8.2	8.5	8.1
\$40.00	2.7	2.9	2.9	2.9
\$50.00	4.1	6.1	6.2	4.5
\$100.00	4.3	5.6	4.1	4.3
\$100.00 + *	0.1	0.9	0.6	0.2

* Asked only for Pacific tidal fishery.

firm that angling is of considerable social and economic importance to Canada as a whole and one of the major components in terms of use of our natural resource sector.

It is estimated that anglers spent close to \$2.5 billion on accommodation, food, transportation, supplies and other services directly related to their angling activities. These expenditures were further augmented by monies anglers spent on investments in durable goods required to supplement their access to the resource and their enjoyment of it. Investments in 1985 totalled over \$3.5 billion for such durables as boats, motors, camping equipment and special vehicles. Anglers estimated that over \$1.9 billion of these expenditures were made in direct relationship to their participation in angling.

In total, therefore, the angling population in Canada in 1985 spent \$6.1 billion of which \$4.4 billion was directly associated with their sport. This directly attributable expenditure represents an increase of 152% in current dollars over expen-

ditures made in 1980. Assessed in constant 1980 dollar terms, the increase is 76% which represents an annual increase in expenditures by anglers of 12% per year since 1980. Increases of this dimension clearly show that angling is a fast growing industry in this country.

Anglers also indicated that they were willing to spend on average almost \$17 per day over and above their current expenditures for accommodation, food, transportation and other services before they would consider stopping fishing. This clearly shows that anglers place more value on the resource than is reflected by their current expenditure patterns.

Over 6.5 million men, women and children fished in Canada in 1985. Of this total, 900,000 were anglers visiting this country, many for the sole purpose of sport fishing. Adult anglers, representing close to 5 million individuals fished for 74 million days and harvested over 230 million fish of all species. The total weight of the fish harvested is estimated to have been in excess of 100 thousand tonnes. Although fish

provide the focus of activity for anglers, the most important factors associated with their enjoyment of the sport are clean water and beauty of surroundings.

As the results in this summary show, sport fishing is an important and growing sector of the natural re-

sources sector. The framework of socio-economic and biological information provided by the survey will enable managers of the resource to better assess fisheries performance in the recreational fishery. Gains made through improved understanding and management will accrue to all Canadians whether they are

anglers or other users of our natural resources.

NOTE

The results presented in this bulletin are subject to *minor* revisions. A more detailed publication containing survey results and analyses will be released later.



Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

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Ontario

Ministry of Vincent G. Kerrio
Natural Minister
Resources

 Fisheries and Oceans Pêches et Océans

SPORT FISHING IN ONTARIO, 1985

Introduction

A survey on sport fishing in Ontario in 1985, was carried out to gather basic information on the nature and magnitude of the sport fishery and to show its importance to the province. The survey was conducted in 1986 by the Fisheries Branch of the provincial Ministry of Natural Resources, in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The surveys are part of a nationally co-ordinated effort by Canada's federal, provincial and territorial fisheries agencies. These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be

generated from a common group of questions administered throughout Canada.

Survey Background

Sixty percent (8,300) of the questionnaires sent to residents who had fished and to nonresidents who had purchased angling licences in Ontario in 1985 were completed and returned to provide the basis for the information given in this report. Resident anglers 16 years of age and over, were identified in a telephone pre-screening survey conducted in December 1985 – January 1986. A stratified random sample of 20,366 households was contacted in order to obtain the sample of anglers to whom questionnaires were sent. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description

of sport fishing in Ontario was developed.

The Resource Base

There are approximately 250,000 lakes in Ontario and unmeasured thousands of kilometers of streams and rivers. These waters are inhabited by more than 140 species of fish. The resource continues to be of economic and social significance to the province through its support of important recreational, commercial, and native food fisheries. The province boasts of one of the largest freshwater fisheries anywhere.

Angler Profile

Ontario's adult angling market in 1985 consisted of approximately 2,199,933 individuals. Approximately 1,577,816 of these anglers were residents of the province who actively fished in 1985. The remaining 622,117 were individuals who

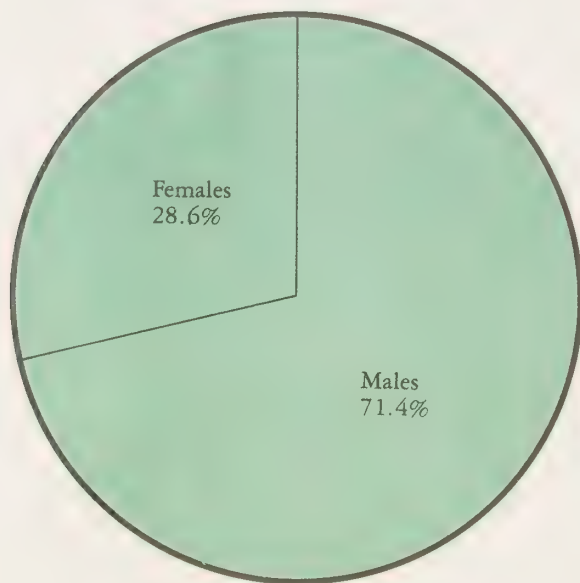
Table 1. Numbers and characteristics of anglers in Ontario in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a) – Adults	1,577,816	34,279	587,838	2,199,933
Active Adult Anglers				
– Males	1,126,061	25,597	468,389	1,620,047
(Average Age, Years)	40	40	45	41
– Females	451,755	7,884	105,795	565,434
(Average Age, Years)	36	38	45	38
Total	1,577,816	33,481	574,184	2,185,481
Children (b)	750,376	9,674	115,064	875,114
Total Active Anglers – All Ages	2,328,192	43,155	689,248	3,060,595

- (a) Individuals who fished or held an angling licence in Ontario (Ontario residents did not require a licence to fish in 1985). This group provides the basis for the statistical information presented in this bulletin.
- (b) Residents of the province under 16 years of age and nonresidents under 17 years of age. (Nonresidents under 17 years old are exempt from purchasing a licence if accompanied by a licensed member of their family).
- (c) Canadians who live in provinces/territories and who fished in Ontario in 1985.

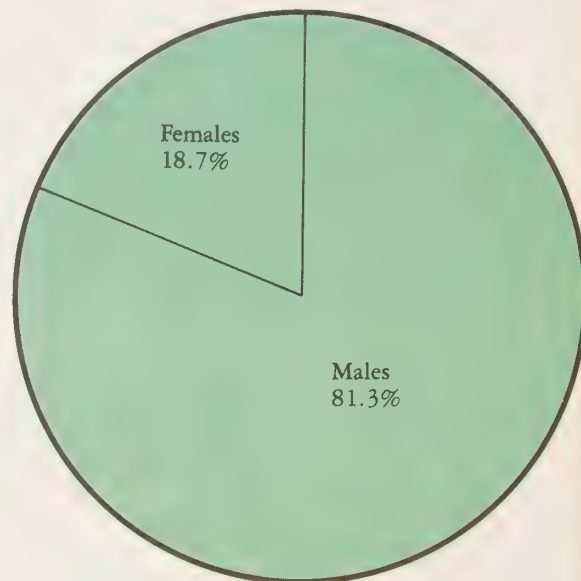
Fig. 1. Sex composition of active anglers.

(A) Resident



1,577,816 active anglers.

(B) Nonresident



607,665 active anglers.

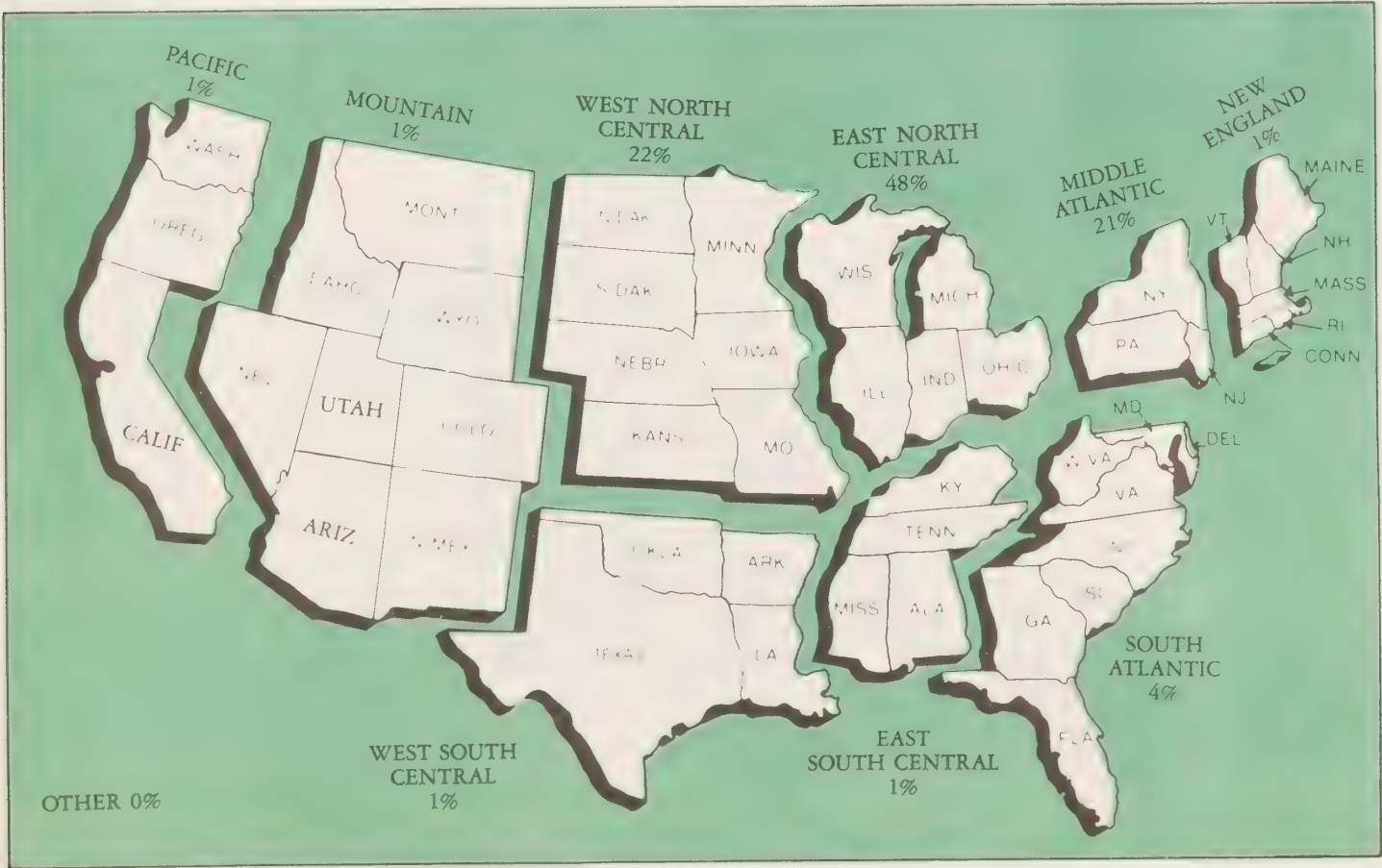
Table 2. Origin of nonresident licensed anglers in Ontario in 1985.

Province-State Group	Number
Canadian	
Newfoundland	114
Nova Scotia	114
New Brunswick	114
Quebec	3,542
Manitoba	27,767
Saskatchewan	914
Alberta	1,257
British Columbia	343
Northwest Territories	114
Canadian Total	34,279
Non-Canadian	
New England, U.S.A.	2,662
Mid-Atlantic, U.S.A.	122,906
East North Central, U.S.A.	284,255
West North Central, U.S.A.	131,913
Mountain, U.S.A.	3,957
Pacific, U.S.A.	3,533
South Atlantic, U.S.A.	22,354
East South Central, U.S.A.	7,413
West South Central, U.S.A.	7,613
U.S.A. - Other States	396
Other Countries	836
Non-Canadian Total	587,838
Grand Total	622,117

purchased a nonresident angling licence to fish in the province (Resident anglers did not require a licence to fish in Ontario in 1985). Approximately 98% or 607,665 of these nonresidents fished (Table 1). As well, 875,114 children under the age of 16 living in adult angler's households also fished, bringing the total population of active anglers in the province to 3,060,595. The impact on Ontario's sport fishery of the large number of anglers under 16 years of age, who are not covered by this survey is probably considerable. Seventy-one percent of the active resident adult anglers and 81% of the nonresidents were male (Figure 1).

Approximately 6% of the nonresident anglers in 1985 were Canadians, mainly from Manitoba. Most of the remaining nonresident anglers were United States citizens who came for the most part, from the East North Central, West North Central and Mid-Atlantic states of the U.S. (Table 2 - Figure 2).

Fig. 2. Regional distribution of United States residents who held Ontario angling licences in 1985.



Fishing Effort

Angling in Ontario is a major recreational activity. Anglers fished a total of about 34.4 million days in 1985 (Table 3). On the average, each angler spent 16 days fish-

ing in 1985. Resident anglers fished an average of 18 days, while non-residents spent an average of 9 days at their sport.

Most fishing (85%) occurred during the period April through September. During that time 83% of resident and 96% of nonresident

fishing effort was expended. More than half of all effort (54%) occurred during July, August, and September. As might be expected, nonresidents were most active during these summer months, expending 60% of their fishing effort during that time (Figure 3).

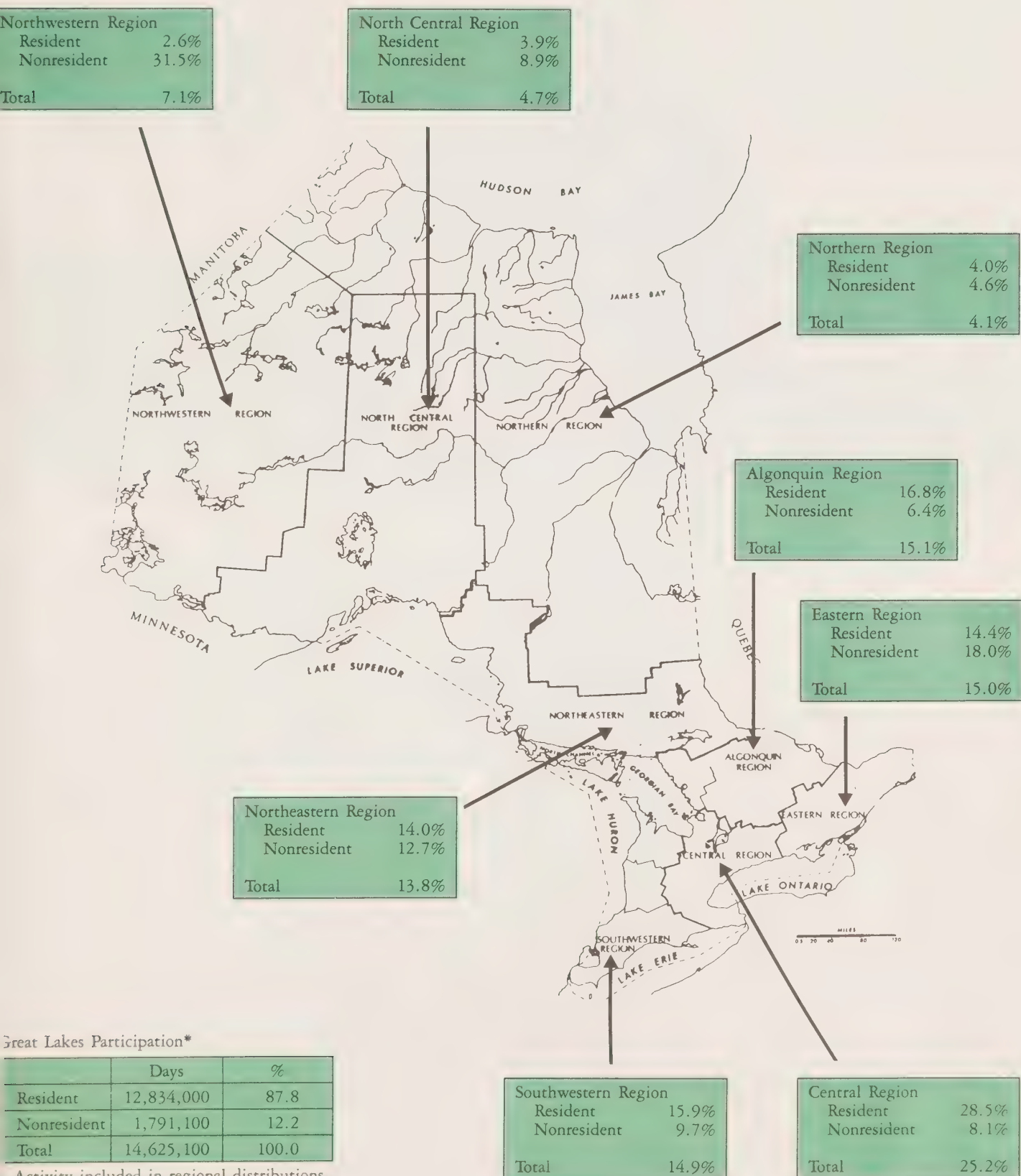
Table 3. Angling effort (in angler days) by season in Ontario in 1985.

	Resident	Nonresident	Total
January – March	3,023,470	72,894	3,096,364
April – June	8,621,749	1,912,745	10,534,494
July – September	15,453,446	3,275,769	18,729,215
October – December	1,902,873	163,782	2,066,655
Total	29,001,538	5,425,190	34,426,728

Fig. 3. Angling effort by season in Ontario in 1985.



Fig. 4. Percentage of angler-days expended by anglers in each fishing area of Ontario in 1985.



For the purposes of the survey, Ontario was divided into eight fishing regions. Of these, the Central region was the most heavily fished (Table 4). The pressure on the region was largely the result of its popularity with resident anglers, who spent 29% of their fishing time

there. In contrast, nonresident anglers preferred the Northwestern region, where they spent about 31% of their time. The majority of other fishing effort was more or less equally divided among four other regions: the Algonquin (which was especially popular with resident an-

glers), the Eastern, the Southwestern and the Northeastern. The remaining regions of the province (the Northwestern, North-Central and Northern) attracted relatively few anglers (Fig. 4).

Table 4. Distribution of angler-days expended by anglers in each fishing area of Ontario in 1985.

Region Fished	Resident		Nonresident		Total	
	No.	%	No.	%	No.	%
Northwestern	749,493	2.6	1,709,717	31.5	2,459,210	7.1
North Central	1,132,535	3.9	481,112	8.9	1,613,647	4.7
Northern	1,160,442	4.0	251,620	4.6	1,412,062	4.1
Northeastern	4,055,074	14.0	690,050	12.7	4,745,124	13.8
Algonquin	4,858,009	16.8	348,645	6.4	5,206,654	15.1
Eastern	4,180,637	14.4	976,892	18.0	5,157,529	15.0
Central	8,253,629	28.5	438,610	8.1	8,692,239	25.2
Southwestern	4,611,719	15.9	528,544	9.7	5,140,263	14.9
Total	29,001,538	100.0	5,425,190	100.0	34,426,728	100.0

The recreational fishery of Ontario is one of major proportions. In 1985, anglers caught an estimated 144.1 million fish of all species and retained 74.4 million of them (Table 5). These fish weighed approximately 40.1 million kilograms or 88.5 million pounds. Resident anglers caught 75% of the fish harvested (by number). Smelt, perch and walleye were the most widely taken species, accounting for 64% of the harvest by number (Figure 5). On average, each angler retained 34 fish. Walleye, trout and bass, in order of priority, were the species most sought after by resident and non-resident anglers (Table 6).

Table 5. Numbers of fish caught and retained by species in Ontario in 1985.

Fish Species	Resident	Nonresident	Total
Smelt	16,658,776	616,844	17,275,620
Perch	12,025,263	4,677,755	16,703,018
Walleye	8,500,662	4,896,811	13,397,473
Smallmouth Bass	3,898,585	1,298,735	5,197,320
Panfish	1,504,252	3,602,233	5,106,485
Pike	2,663,173	2,159,915	4,823,088
Brook Trout	1,968,473	82,707	2,051,180
Largemouth Bass	1,584,761	432,225	2,016,986
Lake Trout	1,702,604	216,056	1,918,660
Rainbow Trout	1,324,399	22,569	1,346,968
Whitefish	474,048	69,920	543,968
Chinook	466,636	9,433	476,069
Coho	280,572	8,555	289,127
Brown Trout	236,508	9,881	246,389
Maskinonge	71,490	16,629	88,119
Other Species	2,530,811	380,146	2,910,957
Total Number Retained	55,891,013	18,500,414	74,391,427
Weight Of Fish Kept (in lbs)	63,081,001	25,379,655	88,460,656

Fig. 5. Proportion of fish (by number) retained by active licensed anglers in Ontario in 1985.

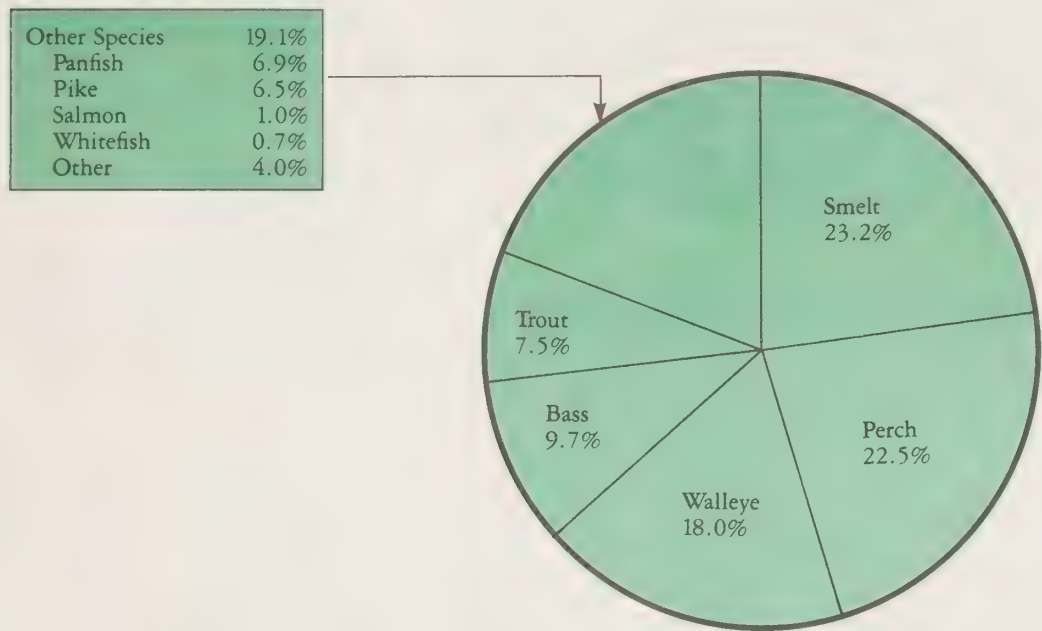


Table 6. Distribution of species preference indicated by anglers in Ontario in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Walleye	26.7	37.5	29.8
Trout	28.3	8.9	22.7
Bass	21.8	19.4	21.1
Northern Pike	8.9	23.4	13.1
Perch	6.3	4.8	5.9
Maskinonge	2.3	3.0	2.5
Salmon	3.3	0.4	2.5
Lake Whitefish	0.7	0.3	0.6
Panfish	0.2	1.0	0.5
Smelt	0.5	0.3	0.4
Catfish	0.4	0.1	0.3
Bluegill	0.1	0.4	0.1
Other Species	0.5	0.5	0.5
Total	100.0	100.0	100.0

Previous Fishing Activity

Eighty-seven percent of the Ontario residents, and 62% of the nonresidents who held Ontario sport fishing licences in 1985, had also fished in the province in 1984 (Table 7). In addition, 73% of the resident and 46% of the nonresident anglers fished in Ontario at the time of the previous survey 5 years ago.

Fishing Outside Ontario

Twenty-seven percent of the non-resident anglers indicated Ontario was the only place they fished in 1985. Only 144,596 resident anglers (9% of adult resident anglers) fished outside Ontario in 1985, usually while on vacation, at the cottage, or on business (Table 8). Michigan and Quebec were their two main destinations, with 30% and 24% respectively, of their out-of-the province fishing days spent in these areas.

Table 7. Fishing activity in Ontario during the last five years (based on angler population in 1985).

Year of Activity	Resident	Nonresident	All Anglers
	%	%	%
1980	72.9	46.3	65.4
1981	75.3	47.6	67.5
1982	79.1	51.3	71.3
1983	83.5	58.6	76.5
1984	87.2	62.1	80.1

Table 8. Reasons given by residents of Ontario for fishing outside the province in 1985.

Reasons	Number	%
Species not Available	10,100	7.0
On Vacation, Business, etc.	114,907	79.5
Other Reasons	19,589	13.5
Total	114,596	100.0

Table 9. Trip characteristics of nonresident anglers in Ontario in 1985.

Characteristics	Number
Trips to Ontario – All Reasons	2,089,734
Fishing Trips to Ontario	1,566,306
– %	75
Days Spent For All Reasons	7,770,524
Days Fished	5,425,188
– %	70
Fishing Trips – Main Reason for Visit	1,307,776
– Secondary Reason	220,253
– Decided Upon After Arrival	38,277
Day Trips for Fishing	331,867
Overnight Trips for Fishing	1,234,439
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	7.6
Tent or Trailer	8.7
Cottages	21.4
Camping in Provincial Parks	3.9
Camping on Crown Land	2.3
Camping in Commercial Camp Grounds	5.6
Fishing Lodge or Camps	34.5
Commercial Accommodation	12.9
Other Accommodation	2.9
Total Nights Spent on Fishing Trips	5,436,037

Table 10. Importance of factors affecting fishing enjoyment in Ontario in 1985.

Factors	Ranking Score		
	Residents	Nonresidents	All Anglers
1. Quality of Water	15.4	12.9	14.6
2. Beauty of Surroundings	14.8	12.9	13.6
3. Escape Routine	11.4	11.3	11.4
4. Weather Conditions	12.1	9.3	11.2
5. Privacy	8.8	9.6	9.1
6. Access to Wilderness	8.9	8.5	8.8
7. Catch Species Desired	7.5	8.9	7.9
8. Angling for Wild Fish	7.3	7.1	7.3
9. Number of Fish Caught	5.9	8.6	6.8
10. Size of Fish Caught	6.1	7.9	6.7
11. Catch as Source of Food	2.4	3.0	2.6

Nonresident Trip Activity

Nonresident anglers made 2,089,734 trips to Ontario in 1985, or about three trips per angler, of which 75% were for fishing (Table 9). For 83% of their fishing trips, fishing was the main reason for visiting the province. Seventy-nine percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 4 nights). On these trips they stayed mostly in fishing lodges and camps (35% of the time) or at their cottages (21% of the time).

Factors Influencing Fishing Enjoyment

Angling is a rewarding recreational activity and many factors influence the overall enjoyment of this sport. To gain a true understanding of the effect of these factors and their relative importance to sport fishing, anglers were asked to rate eleven common factors given to them as very important, important or not important. The results were ranked according to their importance (Table 10).

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in Ontario. The quality of the water, natural beauty of the province, favourable weather conditions and access to wilderness areas were important components of the environmental factor. Other important factors were the ability to escape from work or household routine, privacy from other fishing parties, and success in catching the species desired. Relative to the factors mentioned above, anglers attached little importance to angling for wild (as opposed to hatchery) fish, the number or the size of fish caught, and to catching fish as a source of food.

Wildlife Activities

Ontario residents also enjoyed many wildlife related activities in the province in 1985 (Table 11). Hunting was of particular interest to many of these resident anglers, as 18% were actively involved in hunting for wild birds, 18% hunted for small game and 14% enjoyed hunting for big game. Feeding wildlife, bird watching and nature photography were other favorite pastimes for 37%, 34% and 33% of these anglers respectively.

Membership Organization

Approximately 20% of adult resident anglers were members of a national or provincial wildlife organization or other local membership club; 113,329 anglers indicated membership in a provincial organization, 58,172 indicated membership in the Canadian Wildlife Federation, and 147,936 anglers were members of some other local organizations or clubs (Table 12).

Angler Satisfaction

Approximately 95% of active nonresident anglers indicated they would return to Ontario to fish in the future (Table 13). Sixty-seven percent of nonresident active anglers said they would not have come to the province if there were no fishing opportunities in Ontario in 1985, while 24% said they would have substituted other activities and approximately 7% would have reduced the length of their trip (Table 14). Overall, a majority of 69% of nonresident active anglers rated the quality of fishing in Ontario as good to excellent; 19% rated fishing as fair and 10% rated the quality as poor. (Table 15).

Table 11. Wildlife related activities of Ontario residents in 1985.

Activity	%
Hunting –	
1. Big Game	13.8
2. Small Game	17.8
3. Wildlife Birds	17.8
4. Nature Photography	33.1
5. Bird Watching	34.1
6. Feeding Wildlife	37.0

Table 12. Membership organization of Ontario residents in 1985.

Organization	No.	%
Provincial Organizations or Clubs	113,329	7.1
Canadian Wildlife Fed.	58,172	3.7
Other Membership Organizations	147,936	9.3

Table 13. Projected future participation of active nonresident anglers in Ontario.

Return	No.	%
Yes	576,790	94.9
No	16,231	2.7
No Opinion	14,644	2.4
Total	607,665	100.0

Table 14. Activities of active nonresident anglers if there were no fishing opportunities in Ontario in 1985.

Activity	No.	%
Stay Shorter Time	46,883	7.7
Substitute Other Activities	143,712	23.6
Not Come at All	406,834	67.0
No Opinion	10,235	1.7
Total	607,665	100.0

Table 15. Attitude of active nonresident anglers on quality of fishing in Ontario in 1985.

Rating	No.	%
Excellent	67,833	11.2
Very Good	152,820	25.1
Good	200,229	33.0
Fair	115,929	19.1
Poor	62,697	10.3
No Opinion	8,147	1.3
Total	607,655	100.0

Expenditures and Investments

In 1985, anglers spent \$981.2 million in Ontario on activities and supplies directly connected with their sport (Table 16). Residents spent a total of \$696.4 million, or an average of \$441 per active angler. Nonresidents spent \$284.8 million, or \$469 per active angler. Food, lodging and transportation accounted for 84% of the expenditures of resident anglers and 56% of the expenditures of nonresident anglers (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 27% of the nonresident expenditures.

Anglers in Ontario invested \$1.4 billion on major durable and property in 1985 (Table 17), of which \$782.4 million, or 54% was attributed to sport fishing activities (Figure 7). The average investment of active resident anglers was \$876 and the average investment of active nonresidents was \$109. Ninety-five percent of the investments were made by resident anglers. Boats and related equipment attracted 31% of investment dollars, and special vehi-

Table 16. Expenditures directly attributable to sport fishing in Ontario in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	316,063,782	117,110,935	433,174,717
Transportation	269,434,036	42,958,033	312,392,069
Fishing Services	19,982,264	34,096,389	54,078,653
Fishing Gear	56,402,788	11,062,195	67,464,983
Packages	29,455,970	77,892,727	107,348,697
Other	5,098,780	1,683,160	6,781,940
Total	696,437,620	284,803,439	981,241,059
Average Per Active Angler	441.39	468.68	448.98

Table 17. Major purchases or investments relating in whole or in part to sport fishing in Ontario in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	81,069,146	3,397,652	84,466,798
Boats and Related Equipment	439,463,222	11,587,284	451,050,506
Camping Equipment	156,121,557	2,978,476	159,100,033
Special Vehicles (ATVs etc)	349,951,559	2,500,193	352,451,752
Land-Buildings	327,867,463	43,760,132	371,627,595
Other	27,319,042	1,863,843	29,182,885
Total Expenditures	1,381,791,989	66,087,580	1,447,879,569
Average Per Active Angler	875.76	108.76	662.50
Total Attributable to Sport fishing	741,592,179	40,810,568	782,402,747
Average Per Active Angler	470.01	67.16	358.00

Fig. 6. Proportion of expenditures attributable to sport fishing in Ontario in 1985.

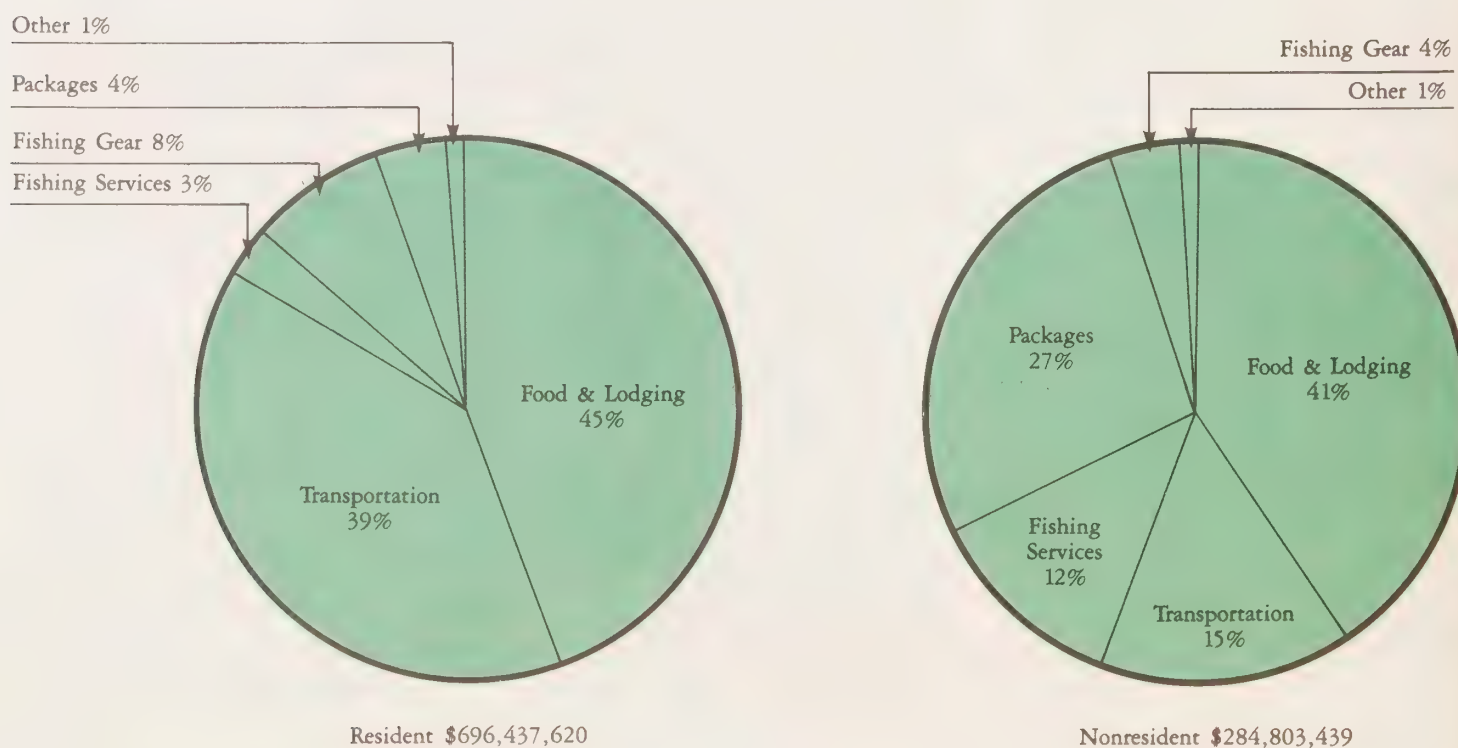


Fig. 7. Proportion of purchases or investments made by anglers in Ontario attributable to sport fishing in 1985.



cles (ATV's, snowmobiles, camper trucks, etc.) were another popular commodity, accounting for 24% of

Table 18. Willingness of active resident anglers to pay additional costs for fishing in Ontario in 1985.

Additional Cost Per Day	% of Active Anglers
	%
up to \$0.00	21.3
up to \$1.00	24.8
up to \$2.00	26.1
up to \$3.00	27.9
up to \$4.00	29.8
up to \$5.00	39.7
up to \$7.50	41.7
up to \$10.00	63.9
up to \$20.00	81.5
up to \$30.00	89.5
up to \$40.00	92.6
up to \$50.00	96.1
up to \$100.00	100.0
Additional Annual Amount ('000)	\$490,556.4

investment dollars. Anglers also invested approximately \$372 million dollars (26% of total purchases) on land-buildings (cabins, cottages, land, etc.) and 41% of these expenditures on land-buildings are directly attributable to their sport fishing activities.

Ontario residents and nonresidents, indicated that 54% and 62% respectively, of their purchases and investments were for sport fishing.

It should be emphasized that caution is needed in the interpretation and use of these expenditure figures. While sport fishing is undoubtedly big business, angler expenditures do not necessarily represent the value of the fisheries resource or the value of recreation provided. Reference to economics literature can provide further guidance on the state of the science in the derivation of various economic 'values' associated with fisheries and how angler expenditures enter those value derivations.

Willingness to Pay

“Willingness to pay” is a method used by economists to estimate the value people place on experiences such as outdoor recreation, scenic beauty or other unpriced amenities of life in this province, over and above the actual costs incurred to enjoy them.

Active resident anglers were asked, “If your fishing costs had been higher in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?” Choices were given between \$1.00 and \$100.00 per day (Table 18). Twenty-one percent of resident anglers indicated they would not have been willing to pay any additional costs. The remaining seventy-nine percent indicated a total “willingness to pay” of \$490.6 million.

While this may represent, however crude, the net economic value

of sport fishing to residents of the province, caution is required. The basic rationale for including this question was an experimental one — to compare the results with estimates of net economic value derived by much more sophisticated methods of valuation that are planned or underway across the country.

The net income to Ontario from nonresident expenditures in the province is being calculated in a separate study to determine the total net economic value of sport fishing.

Conclusions

The results of the 1985 survey of sport fishing in Ontario confirm that it is a major outdoor recreational activity and an important component of the natural resource based tourism in the province. It is estimated anglers spent \$981.2 million on activities directly associated with sport fishing. These included

expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$1.4 billion on major durables and property, of which an estimated \$782.4 million was used for sport fishing.

Overall, 2,185,481 adults fished for sport in Ontario in 1985. More than 1,577,816 of these active adult anglers were residents of the province. Based on the population estimate of 7,046,700* individuals 16 years of age and over, one Ontario resident adult in four fished in 1985. Anglers fished a total of 34.4 million days in 1985 and they harvested 74.4 million fish of all species. These fish weighed 40.7 million kilograms or 85.5 million pounds.

Ontario anglers indicated that they were more concerned about the fishing experience than they were about catching fish. They rated quality of water and natural beauty of the province as the two most im-

portant factors while number and size of fish were rated nine and ten, respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average angler fishing in 1985 was 40 years old, strongly preferred to fish for walleye, trout and bass and felt that water quality and natural beauty of surroundings were the most important factors influencing a day's fishing. This average angler fished 16 days, while spending \$807 and catching 66 fish. Thirty-four of these fish were kept, weighing a total of 41 pounds (18.6 kilograms).

* Statistics Canada — Postcensal Annual Estimates of Population, June 1985 — Volume 3.



Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Fisheries Branch
Ministry of Natural
Resources
Queen's Park
Toronto, Ontario
M7A 1W3

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"Sport Fishing in Ontario, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Ontario, 1985"
Fisheries Branch
Ministry of Natural Resources
Queen's Park
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M7A 1W3

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FRESHWATER SPORT FISHING IN BRITISH COLUMBIA, 1985

Introduction

Details about freshwater sport fishing in British Columbia in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the Recreational Fisheries Branch of the provincial Ministry of Environment and Parks in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sportfishing in British Columbia" and subsequently the second was reported in the "1980 Survey of Freshwater Sportfishing in British Columbia". Details of the province's tidal water sport fishery are provided in a separate bulletin. The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic information on the British Columbia freshwater

sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socio-economic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries

agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Sixty percent (4,496) of the questionnaires sent to persons who had purchased angling licences for freshwater sport fishing in British Columbia in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

British Columbia's freshwater sport fishery is judged by many to be among the finest in the world. Most of the province's lakes and streams contain one or more species of game fish. Of these, the salmonids – trout, char and salmon, are the most important. The rainbow (Kamloops) trout, the most sought after member of the family, is found in lakes in all areas of the province except the Liard drainage system. The steelhead trout, a large sea-going rainbow, inhabits coastal streams of the mainland and Vancouver Island. Two species of cut-throat trout are present, as well as the brown trout.

Three species of char are significant to the freshwater fishery: the Dolly Varden, lake trout and brook trout. Of these, the Dolly Varden is the most widely distributed. The kokanee, a non-migratory sockeye salmon found in many of the province's lakes, is especially popular with visiting anglers. Other species include Arctic grayling, lake whitefish, walleye, bass, perch and northern pike.

Angler Profile

There were 360,143 adult anglers licensed for freshwater fishing in

Table 1. Numbers and characteristics of freshwater anglers in British Columbia, 1985.

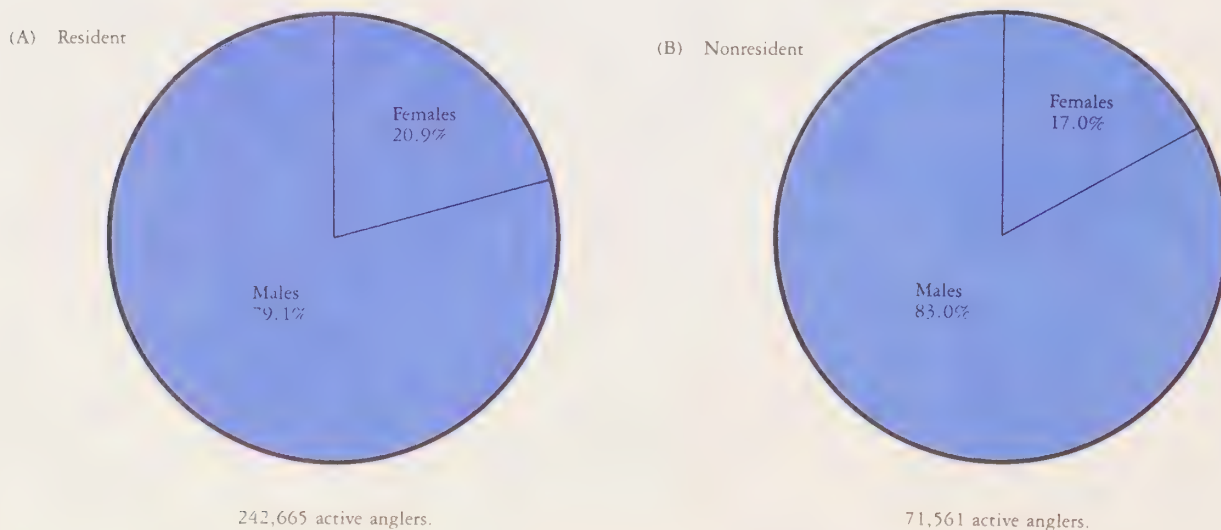
	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a) – Adults	282,898	38,875	38,370	360,143
Active Adult Anglers				
– Males	191,953	30,527	28,860	251,340
(Average Age, Years)	43	41	50	43
– Females	50,712	5,286	6,888	62,886
(Average Age, Years)	43	39	46	43
Total	242,665	35,813	35,748	314,226
Children (b)	89,110	9,164	6,176	104,450
Total Active Anglers – All Ages	331,775	44,977	41,924	418,676

- (a) Individuals who purchased a freshwater angling licence in British Columbia. This group provides the basis for the statistical information presented in this bulletin.
 (b) Individuals under 16 years of age.
 (c) Canadians who live in provinces/territories other than British Columbia and who fished in fresh water in British Columbia in 1985.

British Columbia in 1985, 79% (282,898) of whom were residents of the province (Table 1). About 86% of the residents and 93% of the 77,245 nonresidents were active anglers having fished in 1985. As well 104,450 children under the age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the

province to 418,676. The impact on British Columbia's freshwater sport fishery of the large number of anglers under 16 years of age, who are not covered by this survey is probably considerable. Seventy-nine percent of the active resident adult anglers and 83% of the nonresidents were male (Figure 1). The average age of all anglers was 43 years.

Fig. 1. Sex composition of active anglers.



About half of the nonresident anglers in 1985 were Canadians, mainly from Alberta (85%). Most of the remaining nonresident anglers were United States citizens who came for the most part, from the states of the Pacific region (Table 2 – Figure 2).

Fishing Effort

Freshwater angling was a major recreational activity in British Columbia in 1985. Anglers fished a total of about 4.8 million days in 1985 (Table 3). On the average, each angler spent 15.1 days fishing in 1985. Resident anglers fished an average of 17.6 days, while nonresidents spent an average of 6.6 days at their sport.

Most fishing (83%) occurred during the summer period April through September (Figure 3). During that time 82% of resident, 90% of nonresident Canadian and 95% of

Table 2. Origin of nonresident licensed freshwater anglers in British Columbia, 1985.

Province-State Group	Number
Canadian	
Newfoundland-Labrador	276
Prince Edward Island	79
Nova Scotia	105
Quebec	391
Ontario	2,304
Manitoba	544
Saskatchewan	2,144
Alberta	32,879
Yukon Territory	153
Canadian Total	38,875
Non-Canadian	
New England, U.S.A.	103
Mid-Atlantic, U.S.A.	197
East North Central, U.S.A.	1,066
West North Central, U.S.A.	374
Mountain, U.S.A.	2,700
Pacific, U.S.A.	30,971
South Atlantic, U.S.A.	550
West South Central, U.S.A.	581
U.S.A. – Other States	1,131
Other Countries	697
Non-Canadian Total	38,370
Grand Total	77,245

Fig. 2. Regional distribution of United States residents who held freshwater angling licences in British Columbia, 1985.

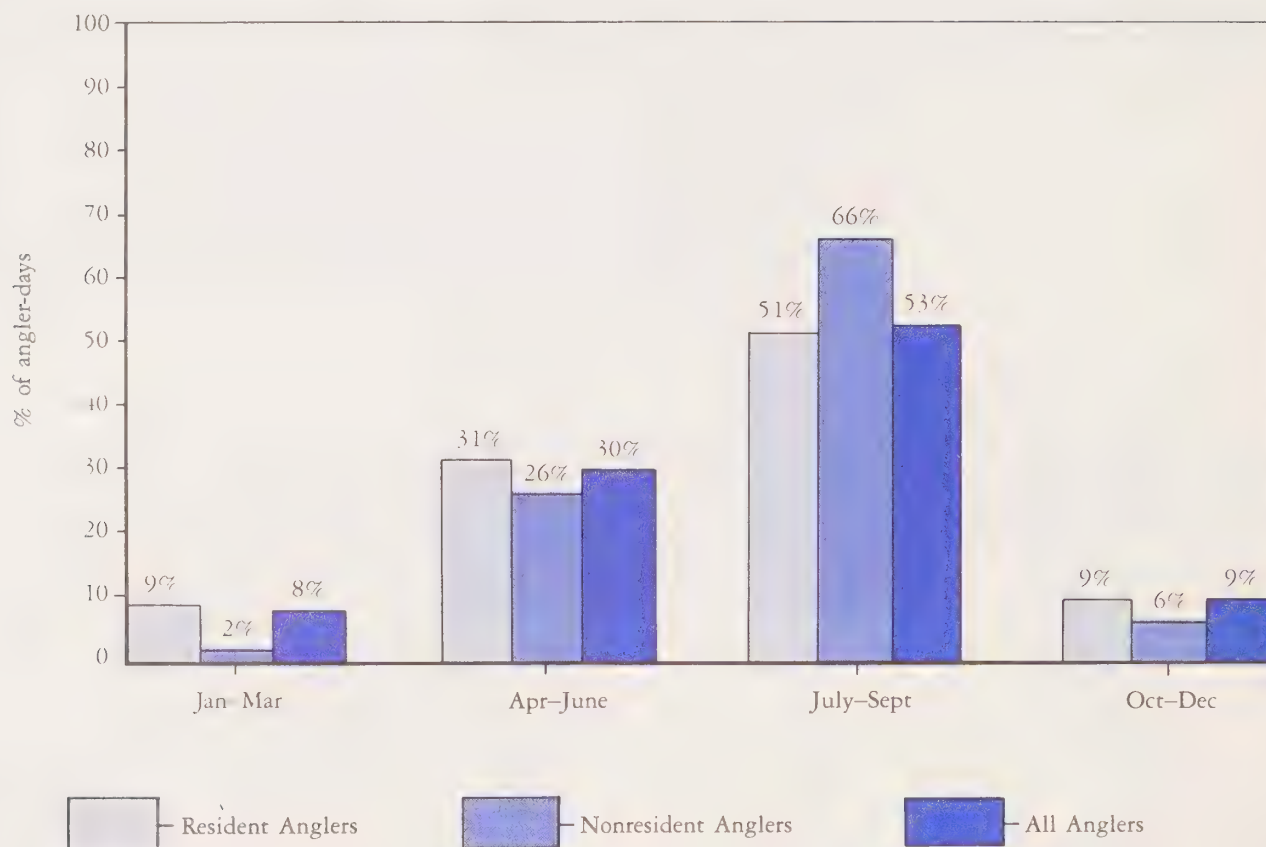


Table 3. Freshwater angling effort* (in angler-days) by season in British Columbia, 1985.

Season	Resident	Nonresident	Total
January – March	368,842	7,113	375,955
April – June	1,325,014	123,360	1,448,374
July – September	2,189,232	314,108	2,503,340
October – December	397,975	28,332	426,307
Total	4,281,063	472,913	4,753,976

* Number of days anglers fished.

Fig. 3. Freshwater angling effort by season in British Columbia, 1985.



other nonresident fishing effort was expended. About half of all effort occurred during July, August, and September.

British Columbia's freshwater fishery is divided into nine management regions. Resident anglers favoured the Thompson-Nicola region, spending 21% of their fishing effort there. Nonresidents showed a preference for

the Kootenay region, although the pressure on the region was largely the result of visits by residents of Alberta. Nonresidents also favoured the Thompson-Nicola, Cariboo and Skeena regions. Overall the Thompson-Nicola and Kootenay regions were the most heavily fished by residents and nonresidents alike (Figure 4).

Harvest

The recreational freshwater fishery of British Columbia is one of significant importance. In 1985, anglers caught an estimated 9.4 million fish of all species and retained 5.8 million of them (Table 4), which weighed approximately 3.6 million kilograms or 7.9 million pounds.

Fig. 4. Percentage of angler-days expended by anglers in each freshwater fishing area of British Columbia, 1985.

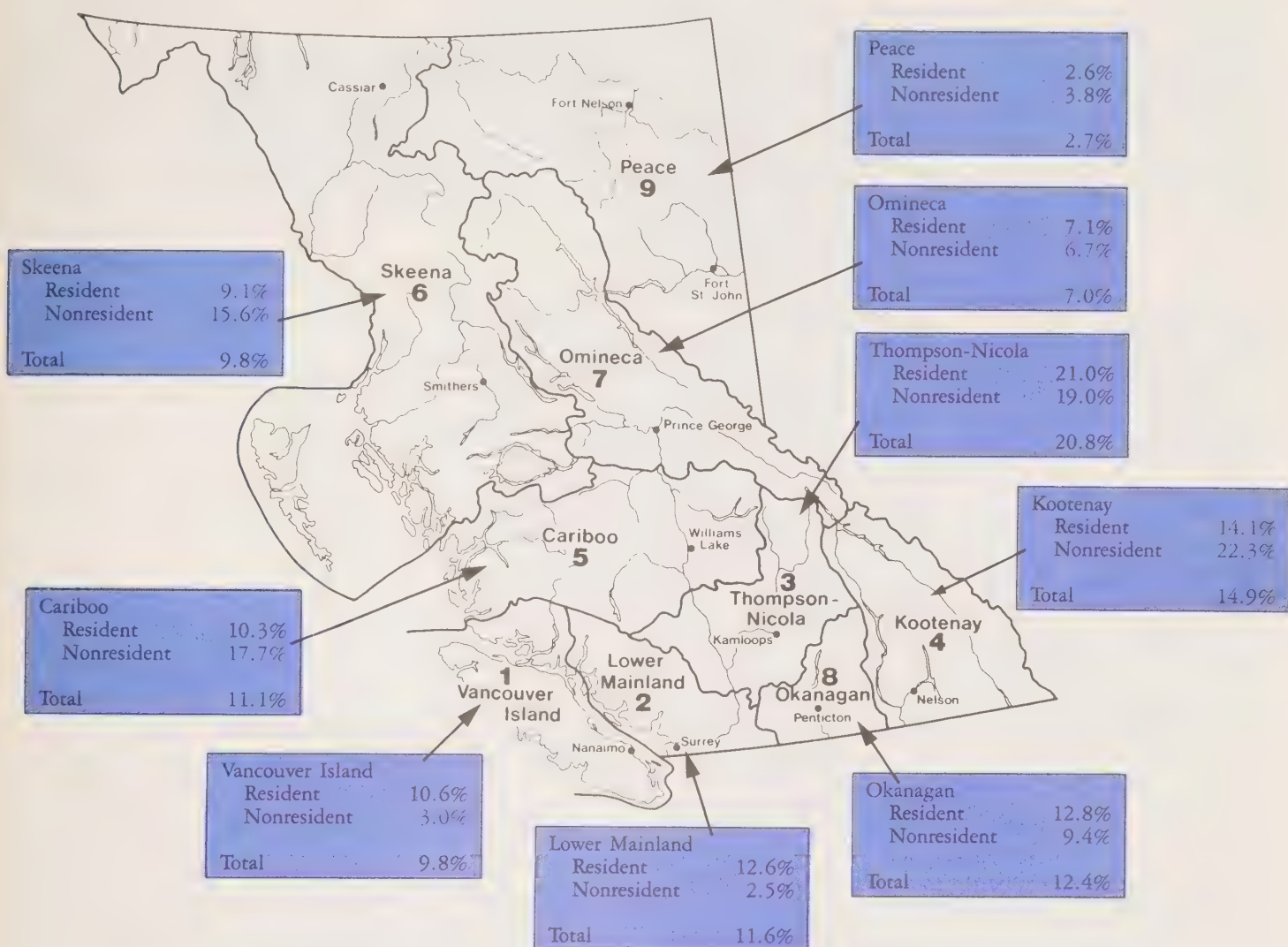
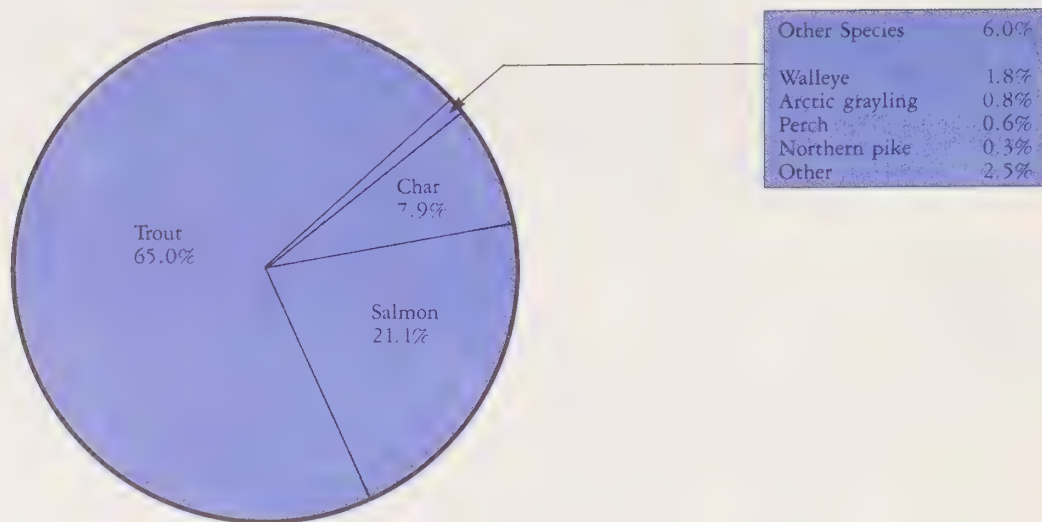


Table 4. Numbers of freshwater fish caught and retained by species in British Columbia, 1985.

Fish Species	Resident	Nonresident	Total
Rainbow trout	2,914,738	389,854	3,304,592
Cutthroat trout	389,206	27,407	416,613
Kokanee	990,905	137,623	1,128,528
Dolly Varden Char	152,531	11,864	164,395
Other Char	268,139	29,202	297,341
Other Trout	51,308	7,419	58,727
Salmon (freshwater)	86,442	9,514	95,956
Northern Pike	12,972	3,214	16,186
Walleye (pickerel)	95,674	11,632	107,306
Perch	19,570	9,979	29,549
Arctic Grayling	36,742	11,973	48,715
Other Species	117,597	29,909	147,506
Total Number Retained	5,135,824	679,590	5,815,414
Weight of Fish Retained (in lbs)	6,887,000	997,485	7,884,485

Fig. 5 Proportion of fish (by number) retained by active licensed freshwater anglers in British Columbia, 1985.



Resident anglers caught 88% of the fish harvested (by number). Rainbow trout, kokanee and cutthroat trout, in that order, were the most widely taken species. Together they accounted for 83% of the harvest (by number) and rainbow trout alone comprised over half of the total harvest (Figure 5). Of the 19 fish retained on average, 11 were rainbow trout, 4 were kokanee, 1 was a cutthroat trout and 3 were other species. Rainbow trout, other trout and kokanee were the most sought after by both resident and nonresident anglers (Table 5).

Table 5. Distribution of species preference indicated by freshwater anglers in British Columbia, 1985.

Species	Resident %	Nonresident %	All Anglers %
Rainbow Trout	37.5	37.3	37.5
Other Trout	35.7	33.4	35.2
Kokanee	12.6	10.7	12.2
Other Salmon	7.4	10.1	8.0
Arctic Char	2.1	0.7	1.8
Walleye	1.1	2.1	1.3
Arctic Grayling	1.1	2.2	1.3
Northern Pike	0.5	1.4	0.7
Bass	0.6	0.5	0.5
Perch	0.3	0.7	0.4
Lake Whitefish	0.3	0.6	0.4
Other Species	0.8	0.3	0.7
Total	100.0	100.0	100.0

Motivations

Seventy-nine percent of the resident B.C. anglers who were licensed to fish in fresh water in 1985 had also fished in the province in 1984 (Table 6). In fact, almost two-thirds of them had been fishing in B.C. at the time of the previous survey 5 years ago. Twenty-five percent of the nonresident anglers indicated B.C. fresh water was the only place they fished in 1985. Only 15,656 resident anglers (5% of licensed

adult resident anglers) fished outside British Columbia in 1985, and usually while on vacation, at the cottage, or on business (Table 7). Two-thirds of their out-of-province fishing trips took them to the Yukon, Alberta or the United States.

Nonresident anglers made 256,977 trips to B.C. fresh water in 1985, or about three trips per angler of which 45% were for fishing (Table 8). On average, they fished on two of these

Table 6. Resident freshwater fishing activity in British Columbia during the last five years (based on resident angler population in 1985).

Year of Activity	Resident %
1980	63.1
1981	66.0
1982	70.0
1983	74.8
1984	79.3

trips. For 55% of their fishing trips, fishing was the main reason for visiting the province. Ninety-three percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 7 nights). Approximately 18% of the time they stayed with friends and relatives and 17% of the time they stayed in tents or trailers.

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of freshwater sport fishing in B.C. The natural beauty of the province, the quality of the water, access to wilderness areas and weather conditions were important components of the environmental factor. Other important factors were the ability to escape from work or household routine, privacy from other fishing parties and success in catching the desired species. Anglers ascribed little importance to the size and number of fish caught, angling for wild (as opposed to hatchery) fish or to catching fish for food (Table 9).

In 1985, 26% of resident anglers also hunted big game in the province. Thirteen percent hunted small game, while 16% hunted birds (Table 10). Approximately 23% of licensed adult resident anglers were members of a national or provincial wildlife organization or local fish and game club; 27,685 resident anglers indicated membership in the B.C. Wildlife Federation, 8,438 indicated membership in the Canadian Wildlife Federation, and 29,777 indicated membership in a private club or association (Table 11).

Approximately 95% of active nonresident anglers indicated they would return to B.C. to go freshwater fishing in the future, although when asked about their activities if freshwater sport fishing was no longer available, 52% said they would have substituted other activities, 14% would have stayed a shorter time and 33% would not have come to the province at all (Tables 12 and 13). Overall, 64% of active nonresident anglers rated the

Table 7. Reasons given by resident British Columbia freshwater anglers for fishing outside the province in 1985.

Reasons	Number	%
Species not Available	1,489	9.5
On Vacation, Business etc.	12,395	79.2
Other Reasons	1,772	11.3
Total	15,656	100.0

Table 8. Trip characteristics of nonresident freshwater anglers in British Columbia fresh water, 1985.

Characteristics	Number
Trips to British Columbia – All Reasons	256,977
Fishing Trips to British Columbia	116,732
– %	45
Days Spent For All Reasons	1,295,571
Days Fished	472,913
– %	37
Fishing Trips – Main Reason for Visit	64,100
– Secondary Reason	39,522
– Decided Upon After Arrival	13,110
Day Trips for Fishing	7,859
Overnight Trips for Fishing	108,873
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	17.6
Tent or Trailer	16.8
Cottages	9.8
Camping in Provincial Parks	9.6
Camping on Crown Land	5.5
Camping in Commercial Camp Grounds	12.9
Fishing Lodge or Camps	12.7
Commercial Accommodation	9.1
Other Accommodation	6.0
Total Nights Spent on Fishing Trips	712,518

Table 9. Relative importance of factors affecting freshwater fishing enjoyment in British Columbia, 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Beauty of Surroundings	15.1	14.2	14.9
2. Quality of Water	15.0	14.0	14.7
3. Escape Routine	11.9	11.7	11.9
4. Access to Wilderness	11.2	10.2	11.0
5. Weather Conditions	10.4	9.3	10.2
6. Privacy	9.6	10.2	9.7
7. Catch Species Desired	6.7	6.8	6.7
8. Size of Fish Caught	6.2	6.9	6.4
9. Angling for Wild Fish	5.7	7.7	6.1
10. Number of Fish Caught	5.2	6.8	5.6
11. Catch as a Source of Food	3.0	2.2	2.8

quality of freshwater fishing in B.C. as good to excellent; 20% rated fishing as fair and the remaining 16% rated the quality as poor, or had no opinion (Table 14).

Expenditures and Investments

In 1985, anglers spent \$144.1 million in B.C. on activities and supplies connected with freshwater sport fishing (Table 15). Residents spent a total of \$112.6 million, or an average of \$464 per active angler. Non-residents spent \$31.5 million, or \$440 per active angler. Food, lodging and transportation accounted for 87% of the expenditures of resident anglers and 73% of the expenditures of nonresident anglers. (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 16% of the nonresident expenditures.

Table 10. Wildlife related activities of British Columbia's resident freshwater anglers in 1985.

Activity	%
Hunting - 1. Big Game	25.5
2. Small Game	12.6
3. Wildlife Birds	16.3
4. Nature Photography	38.2
5. Bird Watching	29.4
6. Feeding Wildlife	22.2

Table 11. Membership organization of British Columbia's resident freshwater anglers in 1985.

Organization	No.	%
B.C. Wildlife Fed.	27,685	9.8
Canadian Wildlife Fed.	8,438	3.0
Private Club or Assoc.	29,777	10.5

Table 12. Projected future participation of active nonresident freshwater anglers in British Columbia.

Return	No.	%
Yes	67,859	94.8
No	2,443	3.4
No Opinion	1,259	1.8
Total	71,561	100.0

Table 13. Activities of active nonresident freshwater anglers if there was no fishing opportunities in British Columbia in 1985.

Activity	No.	%
Stay Shorter Time	9,940	13.9
Substitute Other Activities	37,133	51.8
Not Come at All	23,514	32.9
No Opinion	974	1.4
Total	71,561	100.0

Table 14. Attitude of active nonresident freshwater anglers on the quality of fishing in British Columbia, 1985.

Rating	No.	%
Excellent	8,166	11.4
Very Good	16,694	23.3
Good	21,155	29.6
Fair	14,038	19.6
Poor	10,253	14.3
No Opinion	1,255	1.8
Total	71,561	100.0

Anglers in B.C. invested \$325.1 million on major durables and property in 1985 (Table 16), of which \$159.5 million, or 49% was attributed to freshwater sport fishing activities (Figure 7). The average investment of active resident anglers was \$1,263 and the average invest-

ment of active nonresidents was \$259. Ninety-four percent of the investments were made by resident anglers. British Columbia residents and nonresidents indicated that 48% and 59% respectively, of their purchases and investments were for freshwater sport fishing.

Table 15. Expenditures directly attributable to freshwater sport fishing in British Columbia, 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	47,185,471	14,401,603	61,587,074
Transportation	51,154,401	8,595,516	59,749,917
Fishing Services	5,018,887	2,058,764	7,077,651
Fishing Gear	7,620,530	1,154,283	8,774,813
Packages	1,273,703	5,060,921	6,334,624
Other	323,743	228,763	552,506
Total	112,576,735	31,499,850	144,076,585
Average Per Active Angler	463.92	440.18	458.51

Fig. 6. Proportion of expenditures attributable to freshwater sport fishing in British Columbia, 1985.

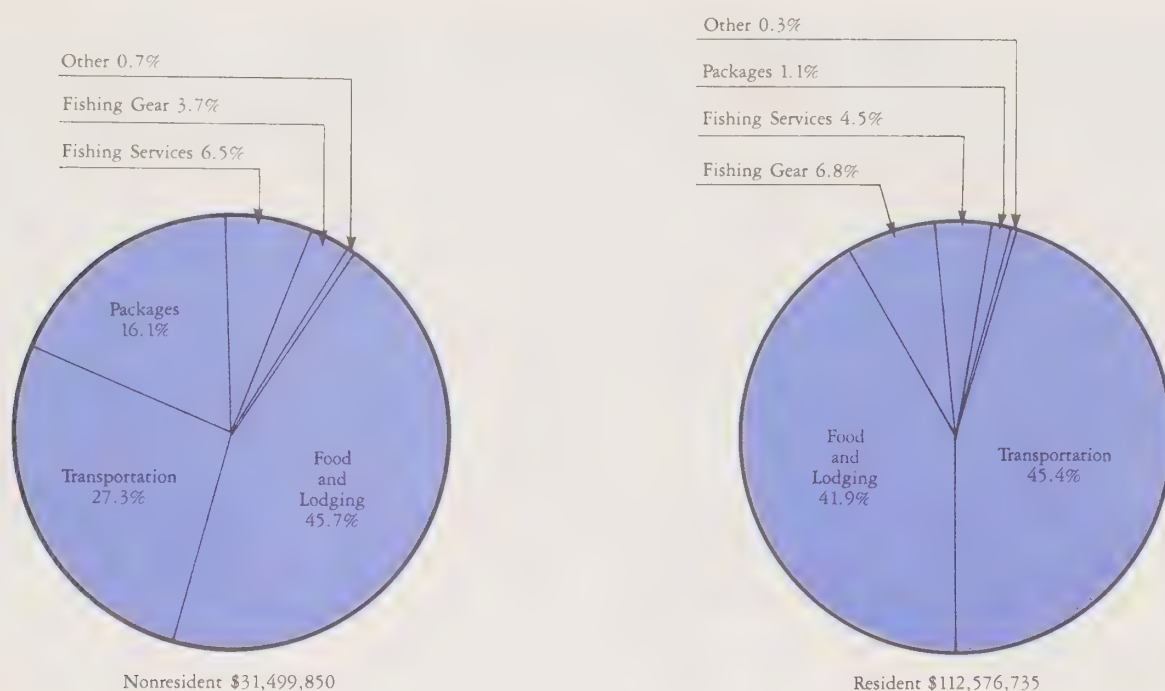
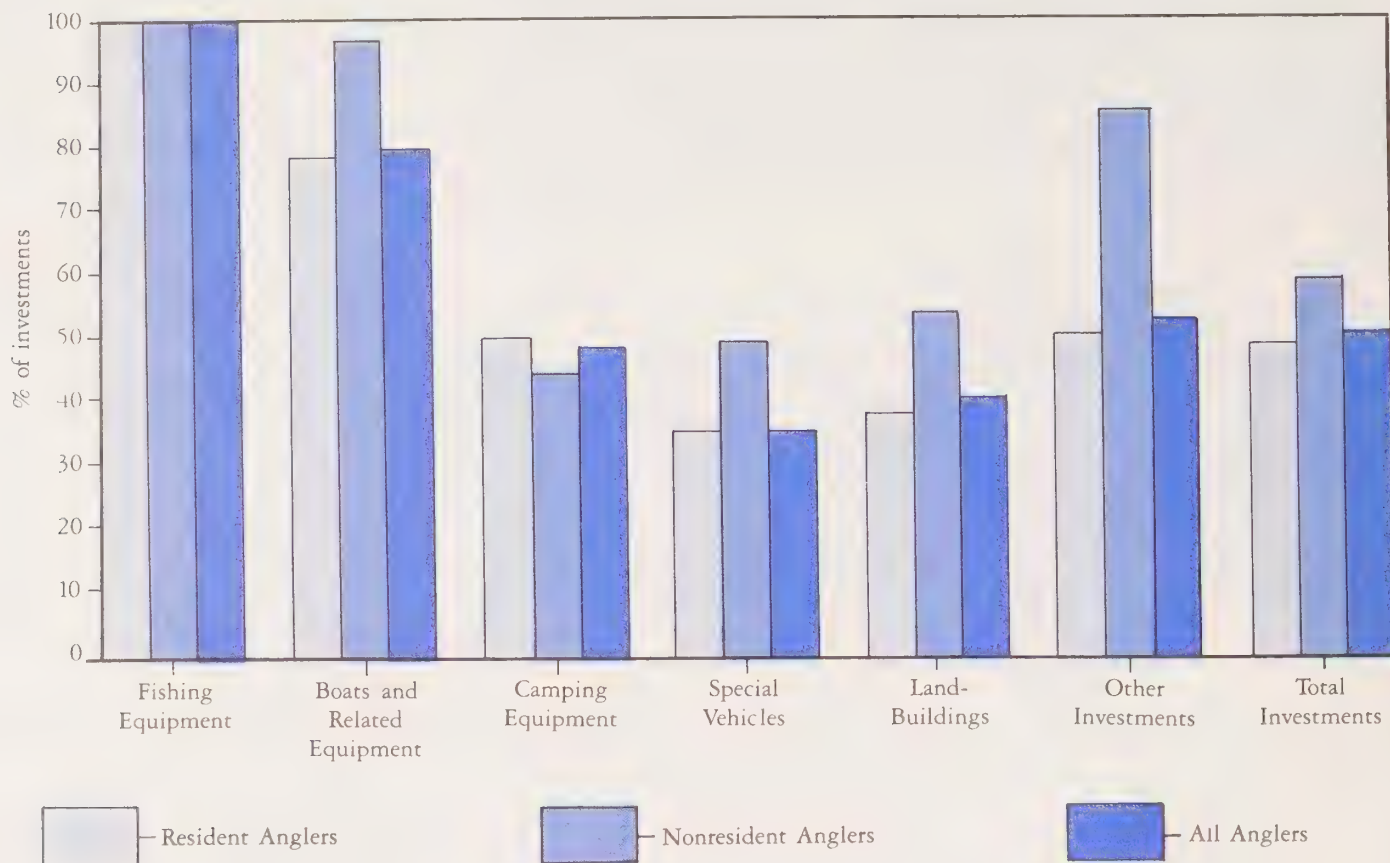


Table 16. Major purchases or investments relating in whole or in part to freshwater sport fishing in British Columbia, 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	11,572,108	961,200	12,533,308
Boats and Related Equipment	45,321,754	2,582,854	47,904,608
Camping Equipment	59,688,132	6,403,348	66,091,480
Special Vehicles (ATV's etc)	130,501,625	1,252,538	131,754,163
Land-Buildings	49,586,958	6,932,084	56,519,042
Other	9,895,595	382,794	10,278,389
Total	306,566,172	18,514,818	325,080,990
Average Per Active Angler	1,263.33	258.73	1,034.55
Total Attributable to Sport fishing	148,505,828	10,953,594	159,459,422
Average Per Active Angler	611.98	153.07	507.47

Fig. 7. Proportion of purchases or investments made by anglers in British Columbia attributable to freshwater sport fishing, 1985.



Overall, anglers spent a total of \$469.2 million on goods and services in 1985, of which \$303.5 million, or 65% was directly attributable to freshwater sport fishing in British Columbia.

Willingness to Pay

“Willingness to pay” is a method used by economists to estimate the value people place on experiences such as outdoor recreation, scenic beauty or other unpriced amenities of life in this province, over and above the actual costs incurred to enjoy them.

Active resident anglers were asked, “If your freshwater fishing costs had been higher in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily

cost would you have decided not to fish?” Choices were given between \$1.00 and \$100.00 per day. Twenty-one percent indicated they would not have been willing to pay any additional costs. The remaining seventy-nine percent indicated a total “willingness to pay” of \$74 million.

This represents the net economic value of freshwater sport fishing to residents of the province. The net income to British Columbia from nonresident expenditures in the province is being calculated to determine the total net economic value of freshwater sport fishing.

Comparison of 1980 Results

All angling licence fees were doubled in British Columbia in 1982. Combined with a recessionary

economy, this resulted in resident licence sales in 1985 being down 17% from 1980, and the number of active resident anglers decreasing by approximately 7%. (Table 17). Non-resident licence sales also decreased by 29% and the number of active anglers by 25%. Total days fished by all licensed anglers was down approximately 9%. The total harvest of all species combined was down 28%, primarily because of decreased harvests of trout and salmon.

Direct expenditures by all licensed anglers was 50% higher than in 1980. The major purchase or investment category was up 58% and the amount totally attributable to sport fishing was up 55%. Some of this difference was likely due to different wording of the question with a broader range of suggested categories in 1985.

Table 17. 1980-1985 comparisons of freshwater angler characteristics, days fished, species harvest and expenditures in British Columbia.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	341,125	282,898	-17.1%	109,162	77,245	-29.2%	450,287	360,143	-20.0%
Total Active Adult Anglers	261,093	242,665	-7.1%	95,381	71,561	-25.0%	356,474	314,226	-11.9%
Total Days Fished ('000)	4,551.4	4,281.1	-5.9%	662.3	472.9	-28.6%	5,213.7	4,754.0	-8.8%
Total Species Caught and Retained ('000)	6,840.4	5,135.8	-24.9%	1,227.3	679.6	-44.6%	8,067.7	5,815.4	-27.9%
Total Direct Expenditures ('000)	\$68,716.3	\$112,576.7	63.8%	\$27,684.3	\$31,499.9	13.8%	\$96,400.6	\$144,076.6	49.5%
Major Purchases and Investments ('000)	\$193,497.8	\$306,566.2	58.4%	\$11,715.1	\$18,514.8	58.0%	\$205,212.9	\$325,081.0	58.4%
Total Attributable to Sport Fishing ('000)	\$100,401.1	\$148,505.8	47.9%	\$2,599.6	\$10,953.6	321.4%	\$103,000.7	\$159,459.4	54.8%

Conclusion

The results of the 1985 survey of freshwater sport fishing in British Columbia confirm that it is an important socio-economic component of the natural resource sector in the province, and a significant form of outdoor recreation. It is estimated anglers spent \$144.1 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$325.1 million on major durables and property, of which \$159.5 million was used for sport fishing. In all, anglers invested a total of \$469.2 million in 1985, of which \$303.6 million was directly attributed to freshwater sport fishing in British Columbia.

Economists generally agree that

the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact of freshwater sport fishing within British Columbia was \$455.4 million or greater in 1985.

Resident anglers also indicated they valued their sport fishing experiences at \$74 million in total above their current costs in 1985. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 314,226 adults fished for sport in British Columbia fresh

water in 1985. More than 242,000 of these active adult anglers were residents of the province. Based on the population estimate of 2.3 million* individuals 16 years of age and over, one resident in nine fished in B.C. fresh water in 1985. Anglers fished a total of 4.8 million days in 1985, and they harvested 5.8 million fish of all species. These fish weighed 3.6 million kilograms or 7.9 million pounds.

British Columbia freshwater anglers indicated they were more concerned about the fishing experience than they were about catching fish. They rated natural beauty of the

* Statistics Canada - Postcensal Annual Estimates of Population, June 1985 - Volume 3.

province and water quality as the two most important factors while size and number of fish were rated eight and ten respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to pro-

vide a greater recreational fishing experience.

In summary, the average British Columbia freshwater angler in 1985 was 43 years old, strongly preferred to fish for trout and felt that natural beauty of surroundings and water

quality were the most important factors influencing a day's fishing. This average angler fished 15 days, while spending \$966 and catching 30 fish. Twenty of these fish, weighing a total of 25 pounds (11.3 kilograms) were kept.

Murtle Lake, Wells Gray Provincial Park, B.C.



"Department of Regional Industrial Expansion Photo"

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Recreational Fisheries
Branch
Ministry of Environment
and Parks
Victoria, British Columbia
V8V 1X5

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This bulletin is a periodic publication produced by the Communications Directorate. It is intended to provide information on the socio-economic aspects of sport fishing in Canada and on the related conservation, management and development of recreational fisheries. Reader comment and enquiries should be directed to:

"Freshwater Sport Fishing in British Columbia, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Freshwater Sport Fishing in British Columbia, 1985"
Recreational Fisheries Branch
Ministry of Environment and Parks
780 Blanshard Street
Victoria, British Columbia
V8V 1X5



FORESTRY, LANDS AND WILDLIFE
Fish and Wildlife Division



Fisheries
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Pêches
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SPORT FISHING IN ALBERTA, 1985

Introduction

Details about sport fishing in Alberta in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the provincial Fish and Wildlife Division of the Department of Forestry, Lands and Wildlife in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sportfishing in Alberta" and subsequently the second was reported in the "1980 Survey of Sport Fishing in Alberta". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Not only does this report provide basic information on the Alberta sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at

5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Fifty-five percent (2,945) of the questionnaires sent to persons who had purchased angling licences in Alberta in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, this overall description of sport fishing in Alberta was developed.

The Resource Base

Of the 49 species of fish available in Alberta, 16 are of interest to anglers. Chief among these are seven

species of trout, as well as walleye, northern pike, yellow perch, mountain whitefish and arctic grayling. Lake whitefish, sturgeon, goldeye and sauger, although less abundant, are also sought. Trout are the most popular sport fish in Alberta. In 1985, the province's stocking program introduced 6 million trout and 5 million walleye into over 300 waterbodies in Alberta.

Alberta offers a variety of angling environments, from alpine and foothill lakes and cold-water mountain streams to larger rivers and lakes. As well, many prairie potholes are stocked annually and provide good trout angling.

For the more adventuresome, there are nine remote fly-in camps in the inaccessible northern part of the province. Trophy anglers may find a visit to one of the seven trophy lakes in northern Alberta especially rewarding. These lakes, which are managed with restrictive bag limits, offer large northern pike, walleye and lake trout. Special licences are required for access to these lakes. The interest shown by Alberta anglers in the program and the introduction of similar programs in other provinces attest to the success of this specialized sport fishery.

Table 1. Numbers and characteristics of anglers in Alberta in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a) – Adults	331,152	6,277	5,881	343,310
Active Adult Anglers				
– Males	236,606	4,890	5,204	246,700
– Females	57,859	805	385	59,049
Total	294,465	5,695	5,589	305,749
Children (b)	122,970	1,412	622	125,004
Total Active Anglers – All Ages	417,435	7,107	6,211	430,753

(a) Individuals who purchased an angling licence in Alberta. This group provides the basis for the statistical information presented in this bulletin.

(b) Individuals under 16 years of age.

(c) Canadians who live in provinces/territories other than Alberta and who fished in Alberta in 1985.

Angler Profile

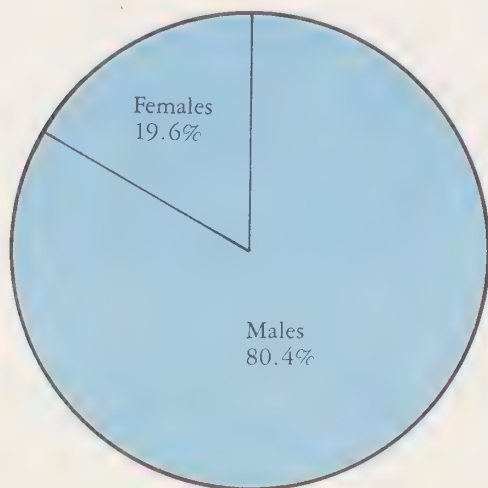
There were 343,310 licensed adult anglers in Alberta in 1985, 96% (331,152) of whom were residents of the province (Table 1). About 89% of the residents and 93% of the 12,158 nonresidents were active anglers having fished in 1985. As well, 125,004 children under the age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the

province to 430,753. The impact on Alberta's sport fishery of the large number of anglers under 16 years of age and those over 65 years of age who do not require a licence and who are not covered by this survey is probably considerable. Eighty percent of the active resident adult anglers and 89% of the nonresidents were male (Figure 1).

Only about 19% of the nonresident anglers in 1985 were Canadians, mainly from Saskatchewan

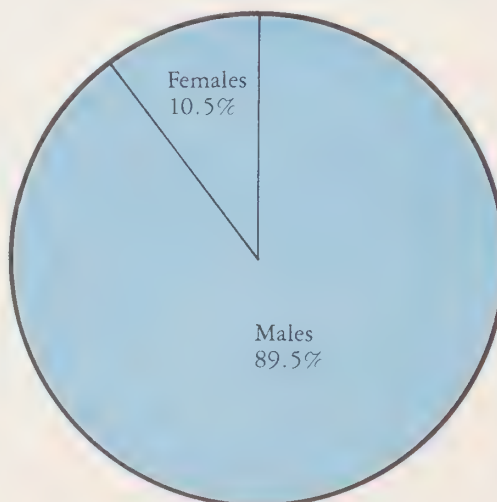
Fig. 1. Sex composition of active anglers.

(A) Resident



294,465 resident anglers.

(B) Nonresident



11,284 nonresident anglers.

and British Columbia. Most of the remaining nonresident anglers were United States citizens who came for the most part, from the Pacific and Mountain regions of the U.S. (Table 2 – Figure 2).

Fishing Effort

Angling in Alberta is a major recreational activity. Anglers fished a total of about 5.4 million days in 1985 (Table 3). On the average, each angler spent 17.6 days fishing in 1985. Resident anglers fished an average of 18.0 days, while nonresidents spent an average of 5.4 days at their sport.

Most fishing (79%) occurred during the summer period April through September (Figure 3). During that time 79% of resident, 91% of nonresident Canadian and 97% of

Table 2. Origin of nonresident licensed anglers in Alberta in 1985.

Province-State Group	Number
Canadian	
Quebec	108
Ontario	707
Manitoba	384
Saskatchewan	2,511
British Columbia	2,567
Canadian Total	6,277
Non-Canadian	
Mid-Atlantic, U.S.A.	160
East North Central, U.S.A.	474
West North Central, U.S.A.	580
Mountain, U.S.A.	1,700
Pacific, U.S.A.	1,868
South Atlantic, U.S.A.	204
East South Central, U.S.A.	58
West South Central, U.S.A.	561
U.S.A. – Other States	51
Other Countries	225
Non-Canadian Total	5,881
Grand Total	12,158

Fig. 2. Regional distribution of United States residents who held Alberta angling licences in 1985.



other nonresident fishing effort was expended. About half of all effort occurred during July, August, and September. Both residents and non-residents were most active during this period, expending 51% and 72% respectively of their fishing effort during these summer months.

Alberta was divided into nine fishing areas. Resident and nonresident anglers favoured the North

Eastern, Central and Southern regions of the province. In general, Alberta anglers spent twice as much time in the North Eastern region as in any other region in the province (Figure 4).

Harvest

The recreational fishery is one of significant importance. In 1985,

anglers caught an estimated 19.5 million fish of all species and retained 11.2 million of them (Table 4). These fish weighed approximately 7.0 million kilograms or 15.4 million pounds. Resident anglers caught 99% of the fish harvested (by number). Perch, northern pike, trout and walleye, were the most widely taken species, accounting for 89% of the harvest by number (Figure 5).

Table 3. Angling effort (in angler days) by season in Alberta in 1985.

Season	Resident	Nonresident	Total
January – March	674,071	1,517	675,588
April – June	1,500,132	13,620	1,513,752
July – September	2,689,232	43,654	2,732,886
October – December	447,853	2,169	450,022
Total	5,311,288	60,960	5,372,248

Fig. 3. Angling effort by season in Alberta in 1985.

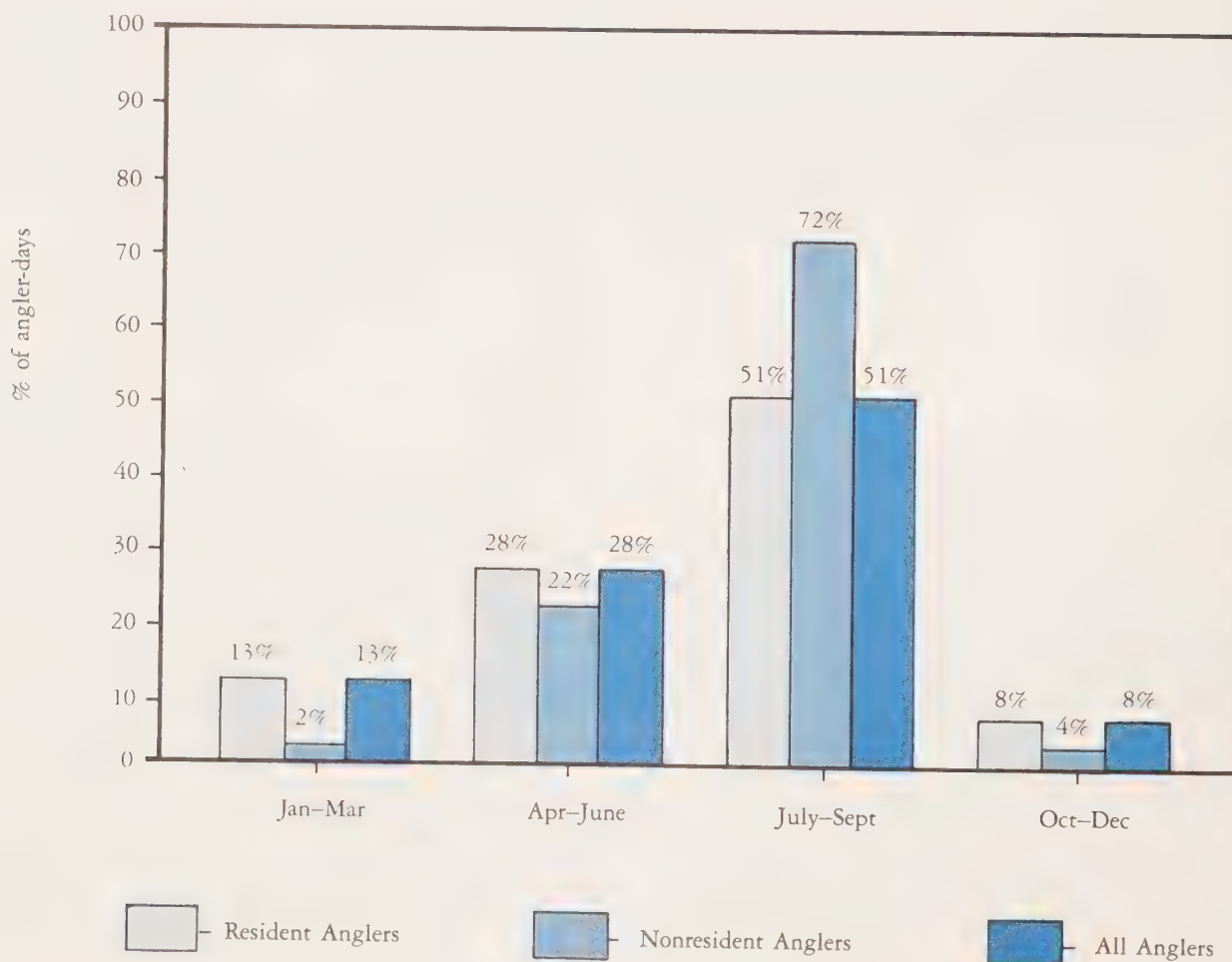


Fig. 4. Percentage of angler-days expended by anglers in each fishing area of Alberta in 1985.

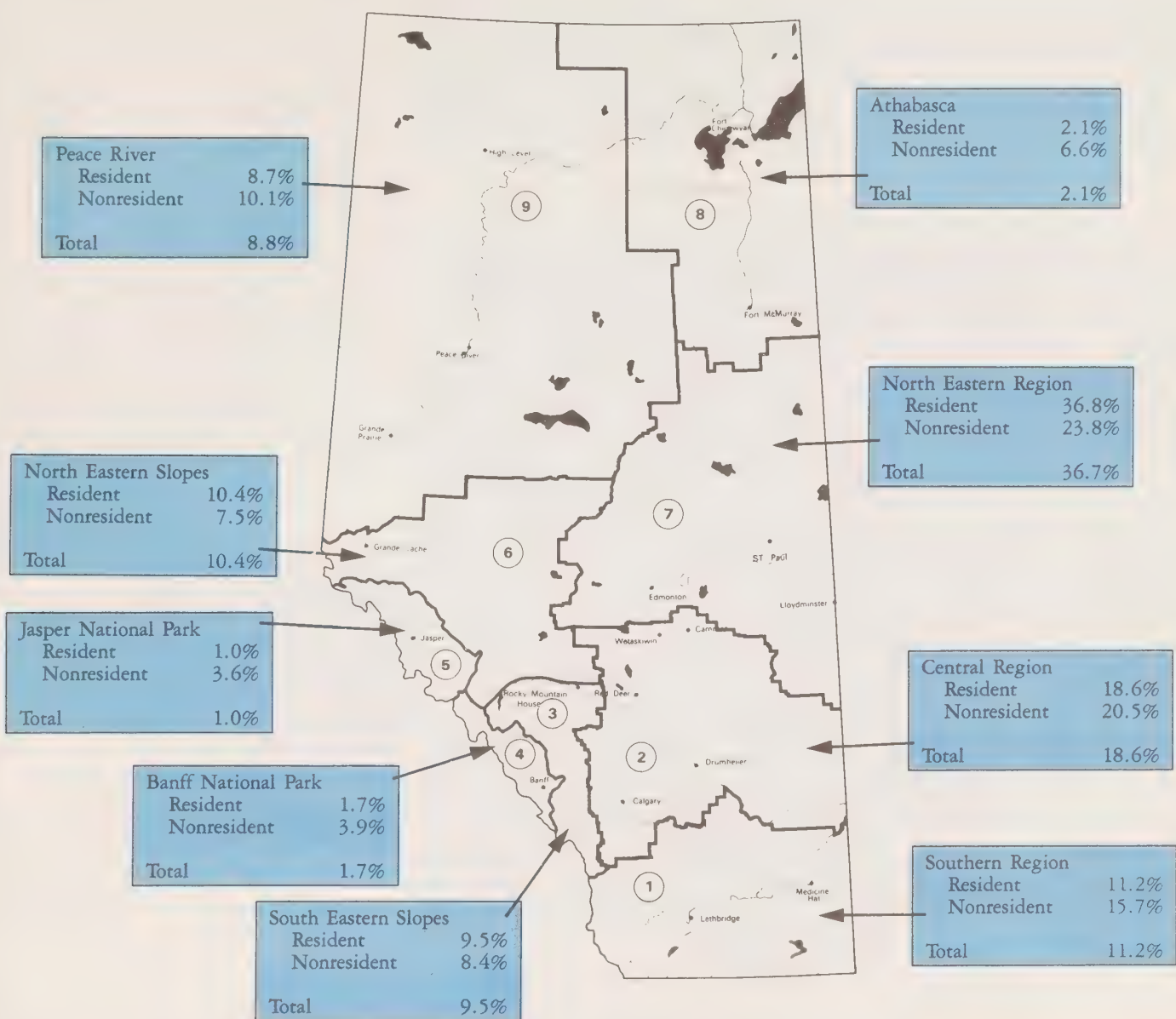


Table 4. Numbers of fish caught and retained by species in Alberta in 1985.

Fish Species	Resident	Nonresident	Total
Perch	4,513,649	16,005	4,529,654
Northern Pike	2,062,787	36,761	2,099,548
Trout	1,964,554	13,460	1,978,014
Walleye	1,338,969	15,101	1,354,070
Goldeye	34,600	245	34,845
Mountain Whitefish	481,544	1,623	483,167
Lake Whitefish	452,705	3,380	456,085
Arctic Grayling	160,641	634	161,275
Other Game Fish	45,929	301	46,230
Other Fish	71,103	378	71,481
Total Number Retained	11,126,481	87,888	11,214,369
Weight of Fish Retained (in lbs)	15,208,523	182,769	15,391,292

Of the 37 fish retained on average, 15 were perch, 7 were northern pike, 6 were trout, 5 were walleye and 4 were other species. Trout, walleye, pike and perch, in order of priority, were the species most sought after by resident and non-resident anglers (Table 5).

Motivations

Eighty-three percent of the Alberta residents and 27% of

the nonresidents, who held Alberta sport fishing licences in 1985, had also fished in the province in 1984 (Table 6). In addition, 63% of the resident and 16% of the nonresident anglers fished in Alberta at the time of the previous survey 5 years ago. Twenty-two percent of the nonresident anglers indicated Alberta was the only place they fished in 1985. Over 81,000 resident anglers (24% of licensed adult resident anglers) fished outside Alberta in 1985, chiefly in British Columbia and Sas-

katchewan, and usually while on vacation, at the cottage, or on business (Table 7).

Nonresident anglers made 45,773 trips to Alberta in 1985, or about 4 trips per angler of which 38% were for fishing (Table 8). On average, they fished on almost 2 of these trips. For 42% of their fishing trips, fishing was the main reason for visiting the province. Seventy-eight percent of their fishing trips to the province lasted more than a day (the average length of an overnight fish-

Fig. 5 Proportion of fish (by number) retained by active licensed anglers in Alberta in 1985.

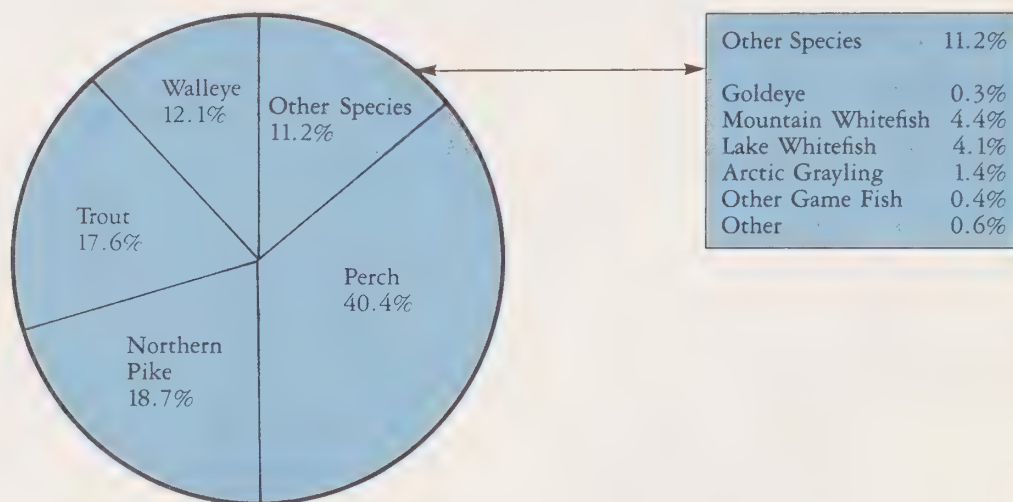


Table 5. Distribution of species preference indicated by anglers in Alberta in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Walleye	22.9	23.5	22.9
Northern Pike	17.0	23.1	17.2
Perch	15.0	6.6	14.8
Trout – General	26.9	25.4	26.9
Trout – Rainbow	3.0	4.9	3.0
Trout – Lake	1.1	1.0	1.1
Trout – Brook	1.0	1.1	1.0
Arctic Grayling	2.8	5.8	2.9
Mountain Whitefish	2.2	1.6	2.2
Lake Whitefish	5.6	1.8	5.5
Other Species	2.5	5.2	2.5
Total	100.0	100.0	100.0

Table 6. Fishing activity in Alberta during the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1980	62.8	16.2	61.1
1981	65.3	16.5	63.6
1982	72.3	19.8	70.4
1983	78.8	26.6	77.0
1984	83.2	26.9	81.2

ing trip was 10 nights). On these trips they stayed mostly with friends and relatives (32% of the time).

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in Alberta. The quality of the water, the natural beauty of the province, and favourable weather conditions were important components of the environmental factor. Other important factors were the ability to escape from work or household routine, access to wilderness areas, privacy from other fishing parties and success in catching the desired species. Anglers ascribed little importance to size and number of fish caught, catching fish for food or to angling for wild (as opposed to hatchery) fish (Table 9).

Respondents were requested to choose one of four management options if fish populations were declining in a particular area due to overfishing (Table 10). Residents favoured lower bag limits and size limits, while nonresidents liked "catch and release" and lower bag limits, in that order.

In 1985, 32% of resident anglers also hunted big game in the province. Fourteen percent hunted small game, while 20% hunted birds (Table 11). Approximately 18% of licensed adult resident anglers, were members of a national or pro-

Table 7. Reasons for residents of Alberta fishing outside the province in 1985.

Reasons	Number	%
Species Not Available	18,678	22.9
On Vacation, Business, etc.	52,316	64.3
Other Reasons	10,392	12.8
Total	81,386	100.0

Table 8. Trip characteristics of nonresident anglers in Alberta in 1985.

Characteristics	Number
Trips to Alberta – All Reasons	45,773
Fishing Trips to Alberta	17,459
– %	38
Days Spent For All Reasons	243,979
Days Fished	60,960
– %	25
Fishing Trips – Main Reason for Visit	7,383
– Secondary Reason	6,639
– Decided Upon After Arrival	3,437
Day Trips for Fishing	3,809
Overnight Trips for Fishing	13,650
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	32.2
Tent or Trailer	12.5
Cottages	5.9
Camping in Provincial Parks	9.6
Camping on Crown Land	1.7
Camping in Commercial Camp Grounds	5.0
Fishing Lodge or Camps	1.7
Commercial Accommodation	16.2
Other Accommodation	15.2
Total Nights Spent on Fishing Trips	139,717

Table 9. Relative importance of factors affecting fishing enjoyment in Alberta in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Quality of Water	14.9	14.1	14.9
2. Beauty of Surroundings	13.7	13.7	13.7
3. Escape Routine	11.5	10.7	11.5
4. Weather Conditions	10.8	8.6	10.6
5. Access to Wilderness	9.9	10.5	9.9
6. Privacy	8.8	9.4	8.8
7. Catch Species Desired	7.9	8.4	7.9
8. Size of Fish Caught	6.9	7.8	6.9
9. Number of Fish Caught	6.0	6.8	6.1
10. Angling for Wild Fish	6.0	7.3	6.1
11. Catch as Source of Food	3.6	2.6	3.6

Table 10. Management options chosen by anglers when faced with the problem of overfishing in Alberta in 1985.

Options	% of Responses		
	Resident	Nonresident	All Anglers
Shorter Season	12.9	10.3	12.8
Size Limit	25.4	18.9	25.2
Lower Bag Limit	28.0	27.8	28.1
Catch and Release	17.7	33.7	18.2
Other	11.9	3.9	11.6
No Opinion	4.1	5.4	4.1

Table 11. Wildlife related activities of Alberta residents in 1985.

Activity	%
Hunting –	
1. Big Game	32.1
2. Small Game	13.8
3. Wildlife Birds	20.3
4. Nature Photography	34.3
5. Bird Watching	22.8
6. Feeding Wildlife	17.1

vincial wildlife organization or local fish and game club; 6,406 anglers indicated membership in the Alberta Fish and Game Association, 8,875 indicated membership in the Canadian Wildlife Federation, and 42,365 indicated membership in a private club or association (Table 12).

Approximately 83% of active non-resident anglers indicated they would return to Alberta to fish in the future (Table 13). More than half of the nonresident active anglers said they would have substituted other activities if there were no fishing opportunities in Alberta in 1985, while 13% said they would have stayed a shorter time and 22% would not have come to the province at all (Table 14). Overall, a majority of 62% of nonresident active anglers rated the quality of fishing in Al-

Table 12. Membership organization of Alberta residents in 1985.

Organization	No.	%
Alberta Fish and Game Association	6,406	1.9
Canadian Wildlife Fed.	8,875	2.7
Private Club or Assoc.	42,365	12.8

Table 13. Projected future participation of active nonresident anglers in Alberta.

Return	No.	%
Yes	9,336	82.7
No	911	8.1
No Opinion	1,037	9.2
Total	11,284	100.0

berta as good to excellent; 17% rated fishing as fair and 13% rated the quality as poor. (Table 15).

Expenditures and Investments

In 1985, anglers spent \$132.5 million in Alberta on activities and supplies directly connected with their sport (Table 16). Residents spent a total of \$127 million, or an average of \$431 per active angler. Nonresidents spent \$5.5 million, or \$485 per active angler. Food, lodg-

Table 14. Activities of active non-resident anglers if there were no fishing opportunities in Alberta in 1985.

Activity	No.	%
Stay Shorter Time	1,436	12.7
Substitute Other Activities	6,496	57.6
Not Come at All	2,460	21.8
No Opinion	892	7.9
Total	11,284	100.0

Table 15. Attitude of active non-resident anglers on the quality of fishing in Alberta in 1985.

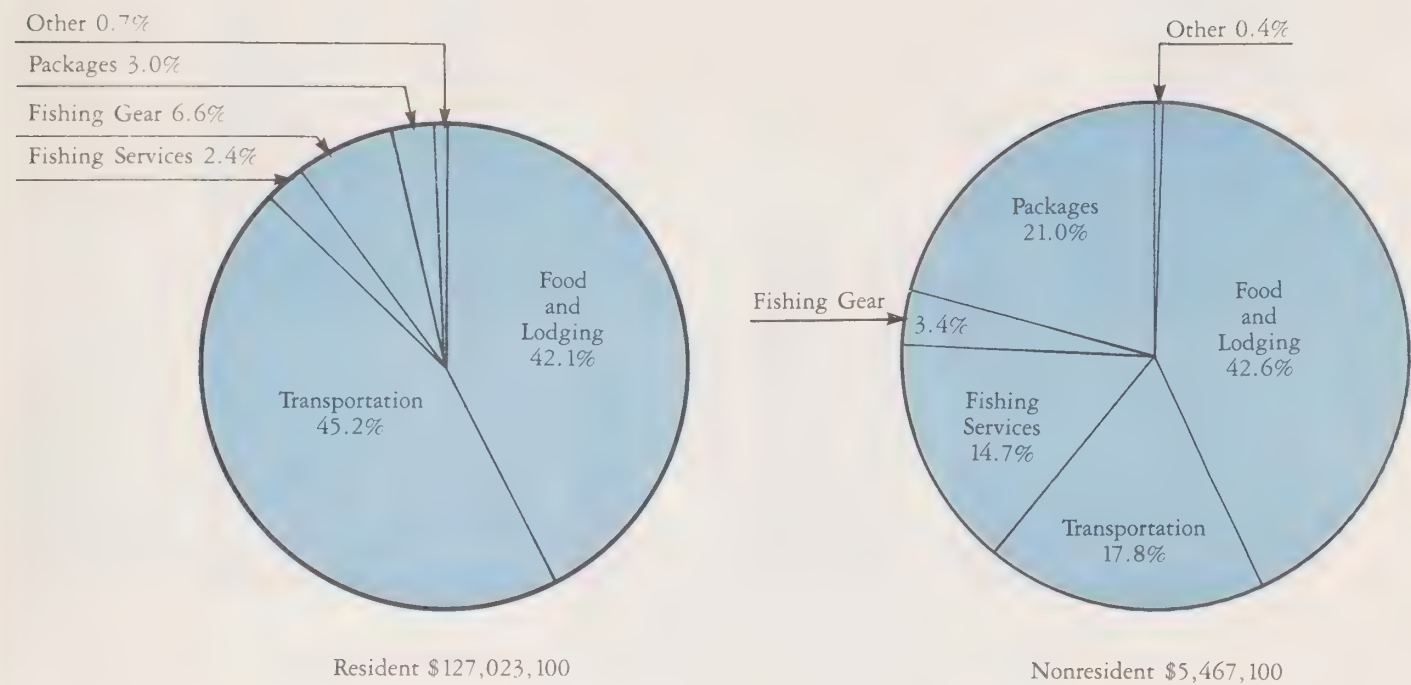
Rating	No.	%
Excellent	1,526	13.5
Very Good	2,985	26.5
Good	2,419	21.4
Fair	1,856	16.5
Poor	1,514	13.4
No Opinion	984	8.7
Total	11,284	100.0

ing and transportation accounted for 87% of the expenditures of resident anglers and 60% of the expenditures of nonresident anglers. (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 21% of the nonresident expenditures.

Table 16. Expenditures directly attributable to sport fishing in Alberta in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	53,468,500	2,330,000	55,798,500
Transportation	57,458,000	972,000	58,430,000
Fishing Services	3,078,600	805,100	3,883,700
Fishing Gear	8,399,800	188,400	8,588,200
Packages	3,794,500	1,148,800	4,943,300
Other	823,700	22,800	846,500
Total	127,023,100	5,467,100	132,490,200
Average Per Active Angler	431.37	485.00	433.33
Average Per Angler-day	23.92	89.68	24.66

Fig. 6. Proportion of expenditures attributable to sport fishing in 1985.



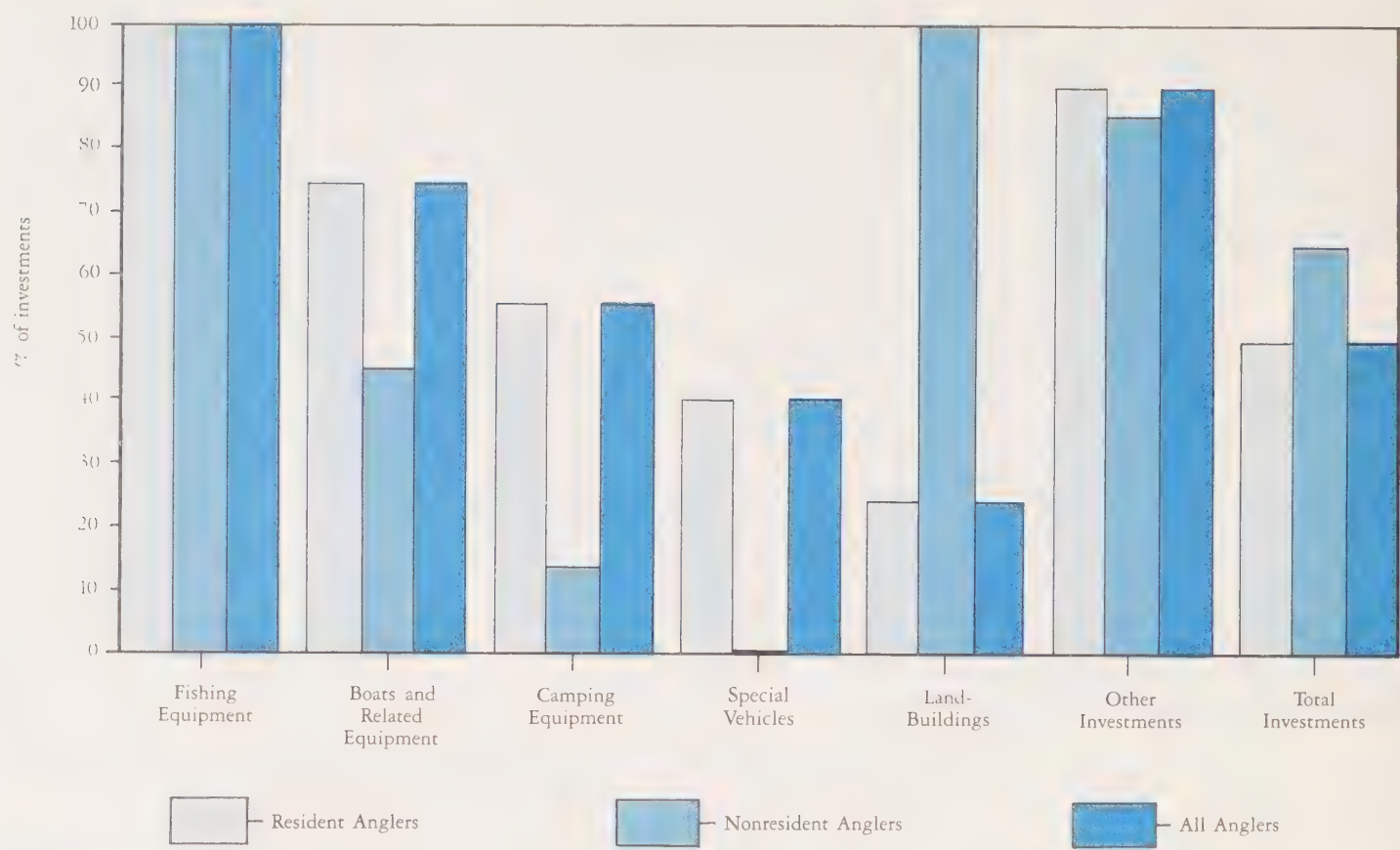
Anglers in Alberta invested \$334.4 million on major durables and property in 1985 (Table 17), of which \$162.2 million, or 48% was attributed to sport fishing activities (Figure 7). The average investment of active resident anglers was \$1,134 and the average investment of active nonresidents was \$49. Just under 100 percent of the investments were made by resident anglers. Alberta residents and nonresidents, indicated that 48% and 64% respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of \$466.9 million on goods and services in 1985, of which \$294.6 million, or 63% was directly attributable to sport fishing in Alberta.

Table 17. Major purchases or investments relating in whole or in part to sport fishing in Alberta in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	13,255,100	233,400	13,488,500
Boats and Related Equipment	48,341,200	57,500	48,398,700
Camping Equipment	74,339,200	171,800	74,511,000
Special Vehicles (ATV's etc)	158,210,600	1,300	158,211,900
Land-Buildings	30,660,000	6,400	30,666,400
Other	9,044,600	83,400	9,128,000
Total Expenditures	333,850,700	553,800	334,404,500
Average Per Active Angler	1,133.75	49.08	1,093.72
Total Attributable to Sport fishing	161,802,900	355,500	162,158,400
Average Per Active Angler	549.48	31.50	530.06

Fig. 7. Proportion of purchases or investments made by anglers in Alberta attributable to sport fishing in 1985.



Willingness to Pay

Active anglers were asked “if your fishing costs had been higher in Alberta in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?” Choices were given between \$1.00 and \$100.00

per day and the results are shown in Table 18. Seventeen percent indicated they were not willing to pay any additional costs, 55% would have stopped fishing when their additional daily costs reached \$10, 76% would have stopped fishing when their additional daily costs reached \$20, 85% when they reached \$30, 88% when they

reached \$40, 94% when they reached \$50, and all anglers would have stopped fishing when their daily costs reached \$100. This means that on average, 17% of the anglers would have stopped fishing when their daily costs exceeded the 1985 daily average of \$24.66 and all anglers would have stopped when the daily costs became \$124.66. When

Table 18. Willingness of active anglers to pay additional costs for fishing in Alberta in 1985.

Additional Cost Per Day	Resident	Nonresident	Total
	%	%	%
\$0.00	16.8	31.9	17.3
\$1.00	18.6	33.7	19.1
\$2.00	20.4	35.1	20.9
\$3.00	22.3	36.0	22.8
\$4.00	23.4	37.0	23.9
\$5.00	32.4	45.0	32.9
\$7.50	34.8	46.7	35.3
\$10.00	54.2	63.3	54.6
\$20.00	75.6	75.9	75.6
\$30.00	85.3	83.2	85.2
\$40.00	88.0	86.5	87.9
\$50.00	94.3	92.5	94.2
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$111,704.4	\$1,210.8	\$112,915.2

extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in Alberta in 1985 was approximately \$113 million.

Comparison of 1980 Results

Resident licence sales increased 12% from 1980, as did the number of active anglers by 16% (Table 19). For nonresidents, licence sales and the number of active anglers decreased very slightly by 4% and 1% respectively. Total days fished by all licensed anglers was up 19%.

The total harvest of all species combined, increased minimally by 6% from 10.6 million in 1980 to 11.2 million in 1985, which can be attributed to a 52% increase in the harvest of both perch and walleye by resident anglers. Nonresident anglers were not as fortunate in 1985. Although they were also successful with their harvests of walleye, which increased 17% and with lake whitefish which was up 47%, they realized a 33% decline in their total harvest from 130,914 in 1980 to 87,888 in 1985. Harvests of goldeye alone were down 90%, and harvests of perch and trout dropped consider-

ably as well, by 40% each respectively. Both expenditures and investments made by all licensed anglers in Alberta were substantially higher in 1985. The total amount spent increased from \$242.7 million in 1980 to \$466.9 million in 1985. Likewise, the amount of expenditures and purchases which were totally attributable to sport fishing, increased from \$154.6 million in 1980 to \$294.6 million in 1985. These figures represent an increase of approximately 92% from 1980, which is evidence of both a renewed level of investment in sport fishing and of the escalating costs of participating in this fishery.

Conclusions

The results of the 1985 survey of sport fishing in Alberta confirm that it is a significant form of outdoor recreation and a major user of the fish resources of the province. Three measures of that significance are contained in the results of the survey. First, anglers spent \$132.5 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Second, anglers invested \$334.4

million on major durables and property, of which \$162.2 million was used for sport fishing. In all, anglers invested a total of \$466.9 million in 1985, of which \$294.6 million was directly attributed to sport fishing in Alberta.

Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact of sport fishing within Alberta was \$441.9 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$112.9 million in total, above their current costs in 1985, before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

The third measure concerns fishing effort and harvests. Overall, 343,310 adult anglers purchased an Alberta sport fishing licence in

Table 19. 1980-1985 comparisons of angler characteristics, days fished, species harvest and expenditures in Alberta.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	295,771	331,152	12.0%	12,673	12,158	-4.1%	308,444	343,310	11.3%
Total Active Adult Anglers	252,059	294,465	16.0%	11,412	11,284	-1.1%	263,471	305,749	16.0%
Total Days Fished ('000)	4,450.9	5,311.3	19.3%	60.2	61.0	1.3%	4,511.0	5,372.2	19.1%
Total Species Caught and Retained ('000)	10,441.6	11,126.5	6.6%	130.9	87.9	-32.8%	10,572.5	11,214.4	6.1%
Total Direct Expenditures ('000)	\$60,416.3	\$127,025.1	110.2%	\$2,513.9	\$5,467.1	117.5%	\$62,570.2	\$132,490.2	111.7%
Major Purchases and Investments ('000)	\$179,322.6	\$333,850.7	86.2%	\$735.7	\$553.8	-24.7%	\$180,058.3	\$334,404.5	85.7%
Total Attributable to Sport fishing ('000)	\$91,394.8	\$161,802.9	77.0%	\$562.3	\$355.5	-36.8%	\$91,957.1	\$162,158.4	76.3%

1985, and of these 305,749 actively participated in the sport. More than 294,000 of the active adult anglers were residents of the province. Based on the population estimate of 1.7 million* individuals 16 years of age and over, one Alberta resident adult in six fished in 1985. Anglers fished a total of 5.4 million days in 1985, and they harvested 11.2 million fish of all species. These fish weighed 7.0 million kilograms or 15.4 million pounds.

Alberta anglers indicated that they were more concerned about the fishing experience than they were about catching fish. They rated water quality and natural beauty as the two most important factors while size and number of fish were rated eight and nine, respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average Alberta angler in 1985 strongly preferred to fish for trout, walleye and northern pike, and felt that water quality and natural beauty of surroundings were the most important factors influencing a day's fishing. This average angler fished approximately 18 days, while spending \$963 and catching 64 fish. Thirty-seven of these fish weighing a total of 50 pounds (22.7 kilograms) were kept.

* Statistics Canada – Postcensal Annual Estimates of Population, June 1985 – Volume 3.



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"Sport Fishing in Alberta, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Alberta, 1985"
Fish and Wildlife Division
Department of Forestry, Lands
and Wildlife
9945-108 Street, Petroleum Plaza
Main Floor, North Tower
Edmonton, Alberta
T5K 2G6

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Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Fish and Wildlife Division
Department of Forestry,
Lands and Wildlife
Edmonton, Alberta
T5K 2G6

SPORT FISHING IN NEW BRUNSWICK, 1985

Introduction

Details about sport fishing in New Brunswick in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the provincial Fish and Wildlife Branch of the Department Natural Resources and Energy in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "Survey of Sport-fishing in New Brunswick in 1975" and subsequently the second was reported in the "1980 Survey of Sport Fishing in New Brunswick". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Not only does this report provide basic information on the New Brunswick sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Fifty-seven percent (3,087) of the questionnaires sent to persons who had purchased angling licences in New Brunswick in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, this overall description of sport fishing in New Brunswick was developed.

The Resource Base

New Brunswick's 28,000 square miles support a large network of streams totaling 20,000 miles but relatively few (2,800) lakes. The lakes, located in the southern section of the Province are generally less



than 500 surface acres; only seven exceed 6,000 surface acres. Despite the few lakes, about 15% of angling effort takes place on lakes, whereas streams account for 80% of the effort. Coastal shoreline waters, which total 1,360 miles, support about 5% of the Province's angling effort.

New Brunswick's inland waters contain 51 species of fish, 17 of which are of interest to anglers (Figure 1).

The brook trout is the most common game fish, ranking first in importance to resident anglers with sea-run Atlantic Salmon ranking second, although salmon is most important to nonresident anglers. The Province's Atlantic salmon sport fishery is one of the world's best with most angling taking place on the Miramichi, Restigouche or St. John River drainages. Recent Department of Fisheries and Oceans regulations

banning commercial fishing and prohibiting retention of large salmon (fish over 63 cm fork length) by anglers should substantially increase the angling and economic importance of the Atlantic salmon fishery after 1988.

Smallmouth bass, lake trout and landlocked salmon represent relatively "new" sport fisheries, a result of management promotion and/or stocking programs undertaken by

Fig. 1. Relative abundance and location of New Brunswick's game fish..

Fish Species	Relative Abundance			Where Found in New Brunswick					
	Abundant	Common	Rare	Province-wide	Northwestern, N.B.	Western, N.B.	Southwestern, N.B.	Southern, N.B.	Northern, N.B.
Coldwater Game Fish									
Brook trout	X			X					
Atlantic salmon	X			X					
Landlocked salmon		X				X			
Lake trout		X				X			
Brown trout			X				X		
Arctic char			X						X
Smelt	X			X					
Burbot		X				X			
Round whitefish			X		X				
Lake whitefish		X				X			
Rainbow trout		X						X	
Warmwater Game Fish									
Smallmouth bass	X						X		
White perch	X							X	
Yellow perch	X			X					
Chain pickerel	X						X		
Bullhead	X			X					
Pumpkinseed sunfish	X						X		
Red fresh sunfish	X						X		

Table 1. Numbers and characteristics of anglers in New Brunswick in 1985.

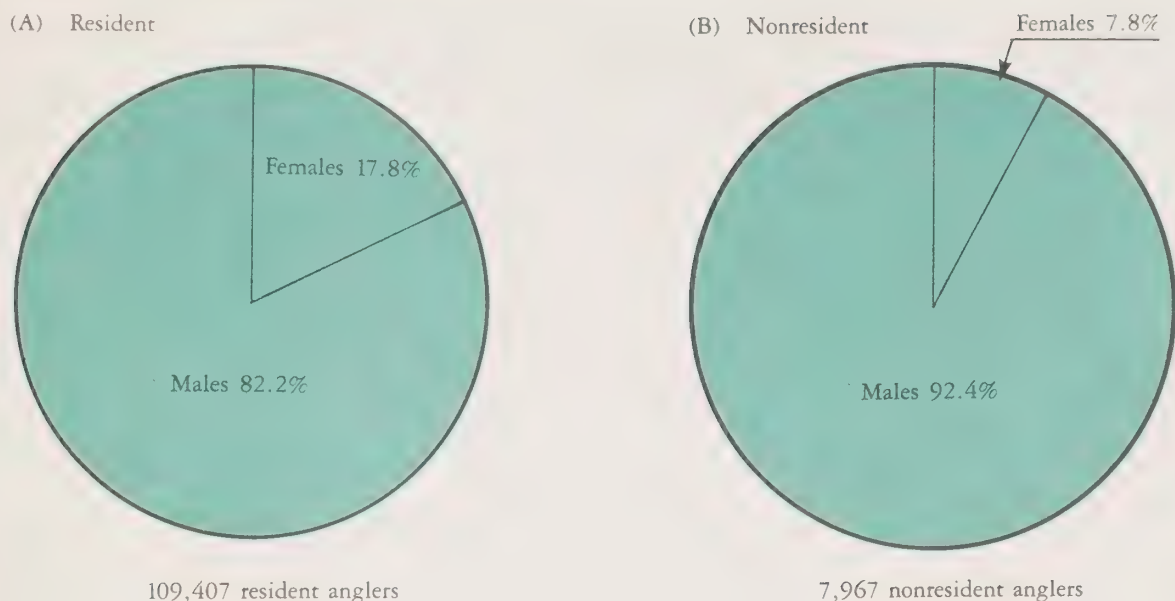
	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a)				
– Adults	171,419	2,404	5,914	179,737
Active Adult Anglers				
– Males	89,963	2,219	5,146	97,328
(Average Age, Years)	39	46	49	39
– Females	19,444	137	465	20,046
(Average Age, Years)	38	34	44	38
Total	109,407	2,356	5,611	117,374
Children (b)	47,466	580	679	48,725
Total Active Anglers				
– All Ages	156,873	2,936	6,290	166,099

(a) Individuals who purchased an angling licence in New Brunswick. This group provides the basis for the statistical information presented in this bulletin.

(b) Individuals under 16 years of age.

(c) Canadians who live in provinces/territories other than New Brunswick and who fished in New Brunswick in 1985.

Fig. 2. Sex composition of active anglers.



the New Brunswick Department of Natural Resources and Energy.

Smelt, striped bass and flounder in coastal or estuarial waters produce generally large catches to the angler; this fishery is gaining popularity each year. Warm water game fish, also very abundant in the Province, are seldom angled by residents or nonresidents.

Angler Profile

There were 179,737 licensed adult anglers in New Brunswick in 1985, 95% (171,419) of whom were residents of the province (Table 1). About 64% of the residents and 96% of the 8,318 nonresidents were active anglers having fished in 1985. As well, 48,725 children under the age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the Province to at least 166,099. The impact on New Brunswick's sport fishery of the large number of anglers under 16 years of age who are not covered by this survey is probably considerable. Eighty-two percent of the active resident adult anglers and 92% of the nonresidents were male (Figure 2).

Approximately 29% of the non-resident anglers in 1985 were Canadians, mainly from Ontario, Québec

and Nova Scotia. Almost all of the remaining nonresident anglers were United States citizens who came for the most part, from the New England and Mid-Atlantic regions of the U.S. (Table 2 – Figure 3).

Fishing Effort

IN 1985, anglers devoted a total of approximately 1.5 million days to sport fishing in New Brunswick (Table 3). Ninety-two percent of the fishing effort focused on the prov-

Table 2. Origin of nonresident licensed anglers in New Brunswick in 1985.

Province-State Group	Number
Canadian	
Newfoundland	17
Prince Edward Island	51
Nova Scotia	583
Quebec	669
Ontario	1,028
Alberta	41
British Columbia	15
Canadian Total	2,404
Non-Canadian	
New England, U.S.A.	3,792
Mid-Atlantic, U.S.A.	1,235
East North Central, U.S.A.	238
West North Central, U.S.A.	36
Mountain, U.S.A.	6
Pacific, U.S.A.	32
South Atlantic, U.S.A.	390
East South Central, U.S.A.	17
West South Central, U.S.A.	137
U.S.A. — Other States	16
Other Countries	15
Non-Canadian Total	5,914
Grand Total	8,318

Fig. 3. Regional distribution of United States residents who held New Brunswick angling licenses in 1985.



Table 3. Angling effort (in angler days) by type of water fished in New Brunswick in 1985.

Waters Fished	Resident		Nonresident		Total	
	No.	%	No.	%	No.	%
Inland Waters	1,305,731	92	48,955	97	1,354,686	92
Coastal Waters	110,833	8	1,271	3	112,104	8
Total	1,416,564	100	50,226	100	1,466,790	100

ince's inland waters. On average, each angler spent 12 days sport fishing. Resident anglers fished on average of 13 days, while nonresidents spent an average of 6 days at their sport.

Harvest

The recreational fishery of New Brunswick is one of substantial importance. In 1985, anglers caught

an estimated 6.8 million fish of all species and retained over 4.9 million of them (Table 4). These fish weighed approximately 1.1 million kilograms or 2.4 million pounds. Resident anglers caught 98% of the fish harvested (by number). Brook trout, smelt and mackerel, were the most widely taken species, accounting for 89% of the harvest by number (Figure 4). Brook trout alone comprised more than two-

thirds of the total harvest (by number). Of the 42 fish retained, on average, 29 were brook trout, 7 were smelt and 1 was a mackerel. Trout, salmon and bass, in order of priority, were the species most sought after by resident anglers; nonresidents differed only in preferring salmon to trout (Table 5).

Table 4. Numbers of fish caught and retained by species in New Brunswick in 1985.

Fish Species	Resident	Nonresident	Total
Brook trout	3,364,842	81,224	3,446,066
Smelt	817,074	411	817,485
Mackerel	169,078	679	169,757
White perch	35,155	2,747	37,902
Flounder	37,115	—	37,115
Striped bass	36,072	96	36,168
Smallmouth bass	32,633	2,845	35,478
Bright Atlantic salmon (under 63cm)**	28,636	5,556	34,192
Pickarel	29,664	619	30,283
Yellow perch	14,505	240	14,745
Rainbow trout	13,348	223	13,571
Togue/Grey trout	11,129	515	11,644
Landlocked salmon	9,432	800	10,232
Brown trout	7,410	8	7,418
Black Atlantic salmon (under 63cm)**	3,413	1,239	4,652
Shad	4,428	22	4,450
Pollock	2,154	—	2,154
Arctic char	1,177	—	1,177
Burbot	1,037	—	1,037
Brown bullhead	564	—	564
Tuna	114	—	114
Sunfish	81	—	81
Whitefish	—	14	14
Bright Atlantic salmon (over 63cm)**	—	—	—
Other Species	235,330	4,202	239,532
Total Number Retained	4,854,391	101,440	4,955,831
Weight of Fish Retained (in lbs)	2,293,355	86,298	2,379,653

** Atlantic salmon over 63 cm fork length must be released by anglers; these large fish are predominantly female and are required to provide additional spawning escapements to New Brunswick rivers.

Fig. 4 Proportion of fish (by number) retained by active licensed anglers in New Brunswick in 1985.

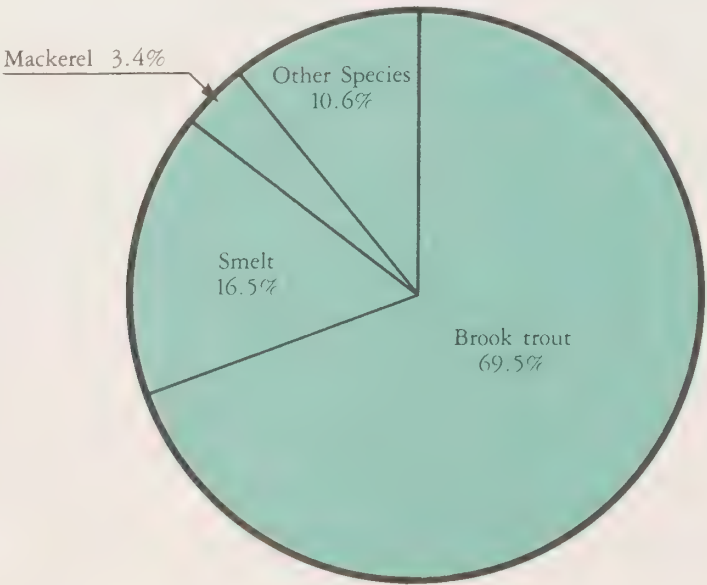


Table 5. Distribution of species preference indicated by anglers in New Brunswick in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Trout	59.7	38.4	58.7
Salmon	20.7	47.9	22.0
Bass	7.4	8.7	7.4
Smelt	4.1	0.0	3.9
Mackerel	2.3	0.6	2.2
Pickrel	2.4	2.1	2.4
Cod	1.1	0.4	1.0
Perch	0.7	0.9	0.7
Flounder	0.8	0.2	0.8
Other species	1.0	0.6	1.0
Total	100.0	100.0	100.0

Motivations

Seventy-two percent of the New Brunswick residents and 48% of the nonresidents, who held New Brunswick sport fishing licences in 1985, had also fished in the province in 1984 (Table 6). In addition, 60% of the resident and 36% of the non-resident anglers fished in New Brunswick at the time of the previous survey 5 years ago. Twenty-

three percent of the nonresident anglers indicated New Brunswick was the only place they fished in 1985. Over 6,647 resident anglers (4% of licensed adult resident anglers) fished outside New Brunswick in 1985, chiefly in Manitoba and Newfoundland, and usually while on vacation, at the cottage, or on business (Table 7).

Nonresident anglers made 43,444 trips to New Brunswick in 1985, or

about 5 trips per angler, of which 37% were for fishing (Table 8). On average, they fished on 2 of these trips. For 74% of their fishing trips, fishing was the main reason for visiting the province. Thirty-three percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 12 nights). On these trips they stayed mostly with friends and relatives, at fishing lodges or camps, or at their cottages.

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in New Brunswick. The natural beauty of the province, the quality of the water and favourable weather conditions were important components of the environmental factor. Other important factors were privacy from other fishing parties, access to wilderness areas, the ability to escape from work or household routine, catching the species desired and angling for wild (as opposed to hatchery) fish. Anglers ascribed little importance to size and number of fish caught or to catching fish for food (Table 9).

In 1985, members of New Brunswick's resident angling population participated in many wildlife activities in the province other than fishing. Hunting was by far a preferred sport as 42.3% of these anglers were actively involved in hunting for big game (an average of 4 days per licensed angler), 28.1% hunted small

Table 6. Fishing activity in New Brunswick during the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1980	60.0	35.8	58.9
1981	60.8	35.1	59.6
1982	65.8	38.7	64.5
1983	70.3	47.1	69.2
1984	72.3	48.0	71.1

Table 7. Reasons for residents of New Brunswick fishing outside the province in 1985.

Reasons	Number	%
Species Not Available	753	11.3
Better Fishing Opportunities		
Outside the Province	776	11.7
On Vacation, Business, etc.	4,163	62.6
Other Reasons	955	14.4
Total	6,647	100.0

Table 8. Trip characteristics of nonresident anglers in New Brunswick in 1985.

Characteristics	Number
Trips to New Brunswick - All Reasons	43,444
Fishing Trips to New Brunswick	16,038
%	37
Days Spent For All Reasons	114,639
Days Fished	50,226
%	44
Fishing Trips - Main Reason for Visit	11,932
- Secondary Reason	3,431
- Decided Upon After Arrival	675
Day Trips for Fishing	10,691
Overnight Trips for Fishing	5,347
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	30.1
Tent or Trailer	5.0
Cottages	26.1
Camping in Provincial Parks	0.4
Camping on Crown Land	0.4
Camping in Commercial Camp Grounds	0.6
Fishing Lodge or Camps	29.4
Commercial Accommodation	5.5
Other Accommodation	2.5
Total Nights Spent on Fishing Trips	65,322

Table 9. Relative importance of factors affecting fishing enjoyment in New Brunswick in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Beauty of Surroundings	12.2	13.0	12.3
2. Quality of Water	12.1	13.1	12.2
3. Privacy	9.8	11.2	9.9
4. Access to Wilderness	9.9	9.8	9.9
5. Escape Routine	9.7	10.6	9.7
6. Weather Conditions	9.9	7.1	9.7
7. Catch Species Desired	9.2	10.2	9.2
8. Angling for Wild Fish	9.1	10.0	9.2
9. Size of Fish Caught	7.5	6.2	7.4
10. Number of Fish Caught	6.6	6.9	6.6
11. Catch as Source of Food	4.1	1.8	4.0

game (3 days per licensed angler), and 20.7% hunted for game birds (2 days per licensed angler) (Table 10). Swimming, camping and boating, were also favourite past-times for 30%, 29.5% and 28.4% of these anglers respectively.

Approximately 11% of licensed, adult resident anglers, were members of a national or provincial wildlife organization of local fish and game club; 3,575 anglers indicated membership in the New Brunswick Wildlife Federation, 2,909 indicated membership in the Canadian Wildlife Federation, 674 in the New Brunswick Federation of Naturalists, 790 in the New Brunswick Conservation Council and 11,268 anglers indicated membership in a private club or association (Table 11).

Approximately 90% of active non-resident anglers said they would return to New Brunswick to fish in the future (Table 12). Thirty-four percent of the nonresident active anglers said they would have substituted other activities if there were no fishing opportunities in New Brunswick in 1985, while 9% said they would have stayed a shorter time and 54% would not have come to the province at all (Table 13). Overall, approximately half (50%) of all active anglers rated the quality of fishing in New Brunswick as good to excellent; 32% rated the quality as fair and 19% rated the quality as poor (Table 14).

Expenditures and Investments

In 1985, anglers spent \$24.8 million in New Brunswick on activities and supplies directly connected with their sport (Table 15). Residents spent a total of \$19.9 million, or an average of \$182 per active angler. Nonresidents spent \$4.9 million, or an average of \$611 per active angler. Food, lodging and transportation accounted for 86% of the expenditures of resident anglers and 44% of the expenditures of nonresident anglers (Figure 5). Packages, which included the costs of aircraft,

Table 10. Wildlife related activities of New Brunswick residents in 1985.

Activity	% of Anglers	Average Days Per Angler
Hunting – Big Game	42.3	3.9
– Small Game	28.1	2.7
– Game birds/waterfowl	20.7	1.7
Nature photography	9.1	0.8
Bird watching	7.0	3.1
Feeding wildlife	7.4	5.8
Visiting fish hatcheries	6.8	0.3
Canoeing or boating	28.4	2.6
Camping	29.5	3.3
Hiking	17.6	2.1
Swimming	30.0	4.5

Table 11. Membership organization of New Brunswick residents in 1985.

Organization	No.	%
N.B. Wildlife Fed.	3,575	2.1
Canadian Wildlife Fed.	2,909	1.7
N.B. Federation of Naturalists	674	0.4
N.B. Conservation Council	790	0.5
Private Club or Assoc.	11,268	6.6

Table 12. Projected future participation of active nonresident anglers in New Brunswick.

Return	No.	%
Yes	7,142	89.6
No	537	8.7
No Opinion	288	3.6
Total	7,967	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in New Brunswick in 1985.

Activity	No.	%
Stay Shorter Time	730	9.2
Substitute Other Activities	2,720	34.1
Not Come at All	4,332	54.4
No Opinion	185	2.3
Total	7,967	100.0

Table 14. Attitude of active nonresident anglers on the quality of fishing in New Brunswick in 1985.

Rating	No.	%
Excellent	4,167	3.6
Very Good	15,085	12.9
Good	34,431	29.3
Fair	37,460	31.9
Poor	22,197	18.9
No Opinion	4,035	3.4
Total	117,374	100.0

lodge facilities and boats, accounted for 33% of the non-resident expenditures.

Anglers in New Brunswick invested \$56.9 million on major durables and property in 1985 (Table 16), of which \$26.5 million, or 47% was attributed to sport fishing activities (Figure 6). The average investment of active resident anglers was \$496 and the average investment of active nonresidents was \$327. Ninety-five percent of the investments were made by resident anglers. New Brunswick residents and nonresidents, indicated that 45% and 76% respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of \$81.6 million on goods and services in 1985, of which \$51.3 million, or 63% was directly attributable to sport fishing in New Brunswick.

Willingness to Pay

Active anglers were asked "if your fishing costs had been higher in New Brunswick in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?" Choices were given between \$1.00 and \$100.00 per day and the results are shown in Table 17. Thirty-three percent indicated they were not willing to pay any additional costs, 69% would have stopped fishing when their additional daily costs reached \$10, 85% would have stopped fishing when their additional daily costs reached \$20, 90% when they reached \$30, 93% when they reached \$40, 97% when they reached \$50, and all anglers would have stopped fishing when their daily costs reached \$100. When extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in New Brunswick in 1985 was approximately \$21.1 million.

Fig. 5. Proportion of expenditures attributable to sport fishing in New Brunswick in 1985.

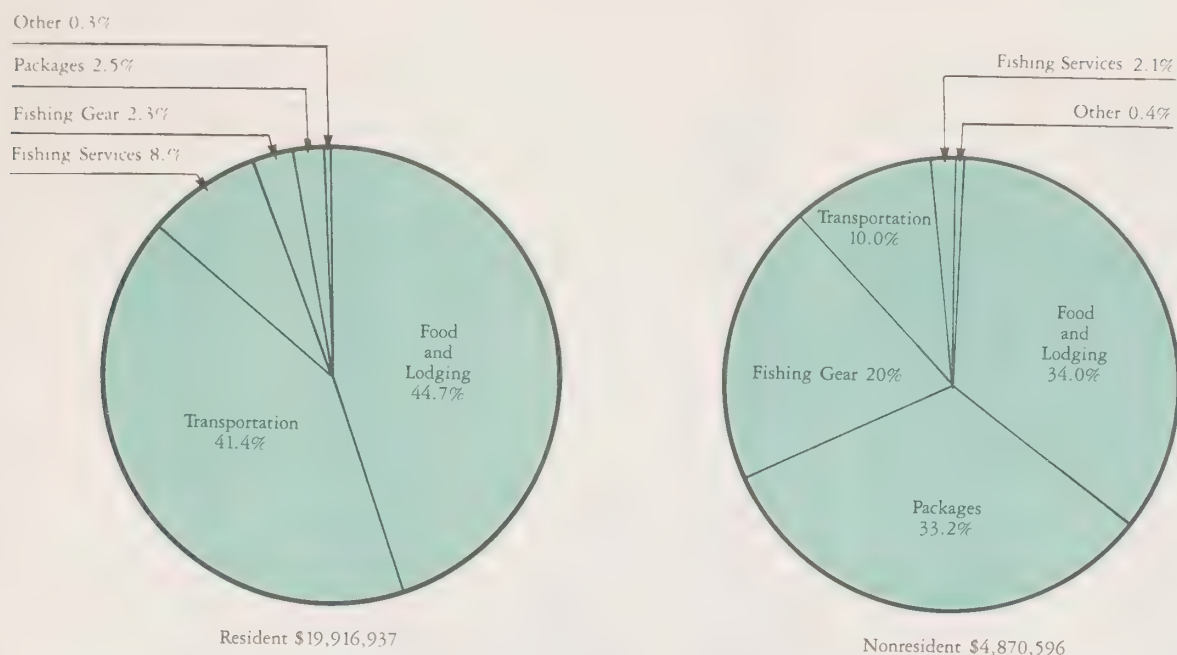


Table 15. Expenditures directly attributable to sport fishing in New Brunswick in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	8,903,455	1,655,849	10,559,304
Transportation	8,237,842	487,396	8,725,238
Fishing Services	1,703,030	103,968	1,806,998
Fishing Gear	502,254	986,151	1,488,405
Packages	501,045	1,615,527	2,116,572
Other	69,311	21,705	91,016
Total	19,916,937	4,870,596	24,787,533
Average Per Active Angler	182.04	611.35	211.19

Table 16. Major purchases or investments relating in whole or in part to sport fishing in New Brunswick in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	2,291,321	142,823	2,434,144
Boats and Related Equipment	4,517,094	95,982	4,613,076
Camping Equipment	7,492,311	2,879	7,495,190
Special Vehicles (ATV's etc)	29,340,720	633,567	29,974,287
Land-Buildings	9,514,674	1,664,214	11,178,888
Other	1,096,261	62,436	1,158,697
Total Expenditures	54,252,381	2,601,901	56,854,282
Average Per Active Angler	495.88	326.58	484.39
Total Attributable to Sport fishing	24,501,823	1,969,391	26,471,214
Average Per Active Angler	223.95	247.19	225.53

Fig. 6. Proportion of purchases or investments made by anglers in New Brunswick attributable to sport fishing in 1985.

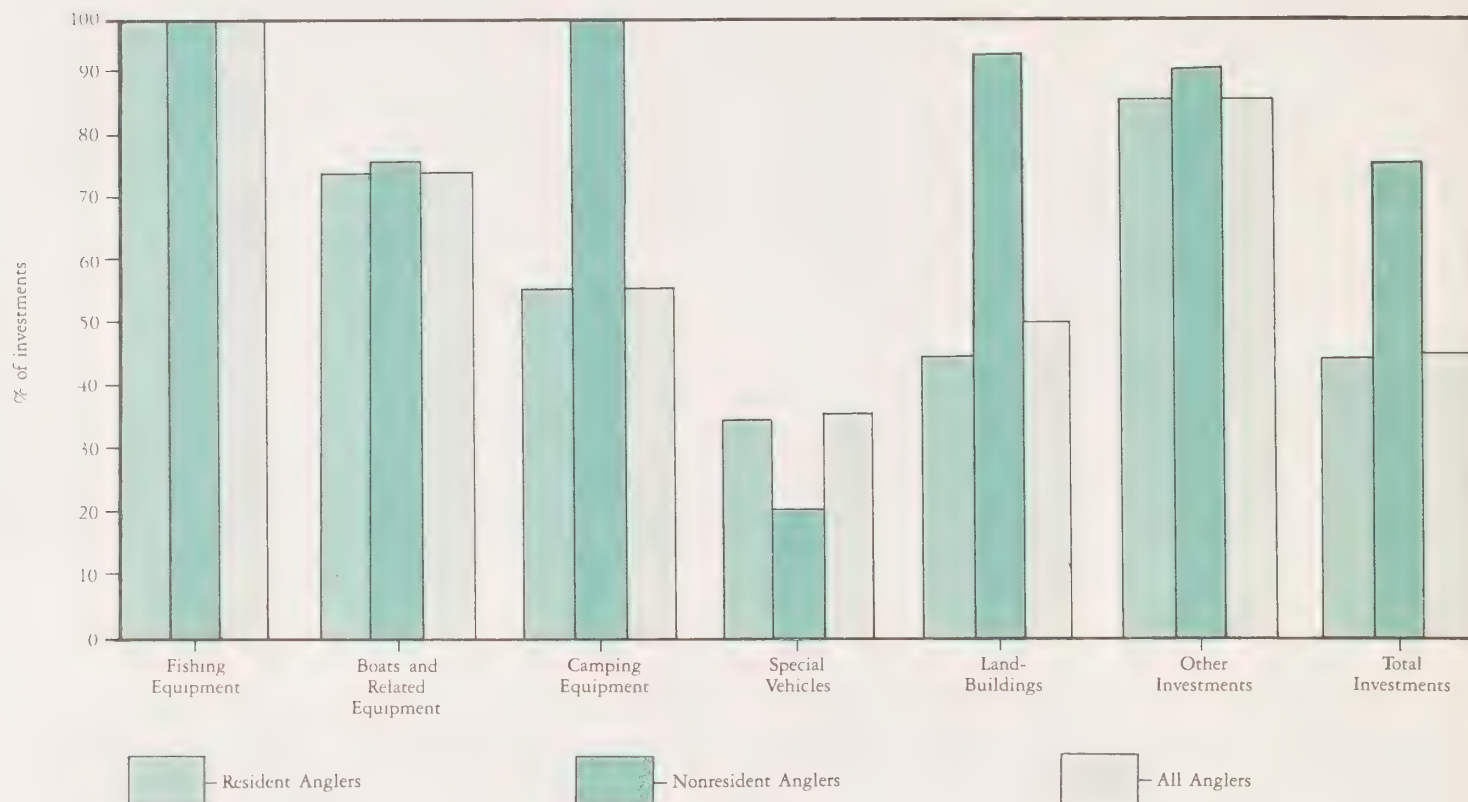


Table 17. Willingness of active anglers to pay additional costs for fishing in New Brunswick in 1985.

Additional Cost Per Day	Resident	Nonresident	Total
	%	%	%
\$0.00	33.1	36.5	33.3
\$1.00	36.4	38.6	36.6
\$2.00	37.9	38.6	37.9
\$3.00	39.7	38.7	39.6
\$4.00	41.0	40.1	41.0
\$5.00	50.5	45.1	50.1
\$7.50	52.8	46.3	52.4
\$10.00	70.0	58.3	69.2
\$20.00	85.3	72.8	84.5
\$30.00	90.9	80.9	90.2
\$40.00	93.3	83.5	92.7
\$50.00	96.8	92.9	96.5
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$20,183.8	\$ 894.9	\$21,078.7

Comparison of 1980 Results

Resident licence sales increased 13% from 1980, as did the number of active anglers by 12% (Table 18). Nonresident licence sales increased 6% and the number of active anglers increased 4%. Total days fished by all licensed anglers was down 10%.

The total harvest of all species combined, dropped 16% from 5.9 million to just over 5.0 million in 1985 primarily due to:

- i) a decrease of 400,000 fish in the brook trout harvest, perhaps due to past angler overexploitation, especially in the Restigouche and Chaleur Bay drainages;
- ii) regulation changes restricting retention of black and bright Atlantic salmon; if angler released fish were included in the fish retained category, the Atlantic salmon harvest would be up over 1980;
- iii) decrease in smelt harvest of 40,000 fish, probably reflecting a natural population fluctuation of the smelt population.

Brown trout, lake trout and landlocked salmon catches in 1985 were all up over 1980 due to supplemental and introductory stocking programs from hatcheries.

Direct expenditures by all licensed anglers increased 18%, from \$21 million in 1980 to \$25 million in 1985. The major purchase and investment category was up 119% as was the amount totally attributable to sport fishing, up 127%. Some of this increase may be due to different wording of the question with a broader range of suggested categories in 1985.

Conclusions

The results of the 1985 survey of sport fishing in New Brunswick confirm that it is a significant form of outdoor recreation and an important socio-economic component of the natural resource sector in the province. It is estimated anglers spent \$24.8 million on activities directly associated with sport fishing. These included expenditures for ac-

commodation, food, travel, bait, licences, etc. Additionally, anglers invested \$56.9 million on major durables and property, of which \$26.5 million was used for sport fishing. In all, anglers invested a total of \$81.6 million in 1985, of which \$51.3 million was directly attributed to sport fishing in New Brunswick.

Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact on sport fishing within New Brunswick was \$77 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$21.1 million in total above their current costs in 1985 before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Table 18. 1980-1985 comparisons of angler characteristics, days fished, species harvest and expenditures in New Brunswick.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	152,380	171,419	12.5%	7,821	8,318	6.4%	160,201	179,737	12.2%
Total Active Adult Anglers	97,950	109,407	11.7%	7,656	7,967	4.1%	105,606	117,374	11.1%
Total Days Fished ('000)	1,579.5	1,416.6	- 10.3%	57.1	50.2	- 12.1%	1,636.6	1,466.8	- 10.4%
Total Species Caught and Retained ('000)	5,754.4	4,854.4	- 15.6%	130.5	101.4	- 22.3%	5,884.9	4,955.8	- 15.8%
Total Direct Expenditures ('000)	\$16,759.1	\$19,916.9	18.8%	\$4,294.0	\$4,870.6	13.4%	\$21,053.1	\$24,787.5	17.7%
Major Purchases and Investments ('000)	\$25,266.6	\$54,252.4	110.8%	\$754.1	\$2,601.9	245.0%	\$26,020.7	\$56,854.3	118.5%
Total Attributable to Sport fishing ('000)	\$10,943.1	\$24,501.8	123.9%	\$731.8	\$1,969.4	169.1%	\$11,674.9	\$26,471.2	126.7%

Overall, 117,374 adults fished for sport in New Brunswick in 1985. More than 109,400 of these active adult anglers were residents of the province. Based on the population estimate of 539,200* individuals 16 years of age and over, one resident in 5 fished in 1985. Anglers fished a total of 1.5 million days in 1985, and they harvested 5 million fish of

all species. These fish weighed 1.1 million kilograms or 2.4 million pounds.

New Brunswick anglers indicated they were more concerned about the fishing experience than they were about catching fish. They rated natural beauty of the province and quality of the water as the two most important factors, while size and number of fish were rated nine and ten respectively. Although fish provide the focus for angling activity, other elements must be considered

by managers in order to provide a greater recreational fishing experience.

In summary, the average angler in 1985 was 39 years old, strongly preferred to fish for trout and felt that natural beauty of surroundings and quality of water were the most important factors influencing a day's fishing. This average angler fished 12 days while spending \$437 and catching 58 fish. Forty-two of these fish, weighing a total of 20 pounds (9 kilograms) were kept.

* Statistics Canada – Postcensal Annual Estimates of Population, June 1985 – Volume 3.

KESWICK RIVER, NEW BRUNSWICK



“DEPARTMENT OF REGIONAL INDUSTRIAL EXPANSION PHOTO”

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Fish and Wildlife Division
Department of Natural
Resources and Energy
Fredericton, New Brunswick
E3B 5H1

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“Sport Fishing in New Brunswick, 1985”
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

“Sport Fishing in New Brunswick, 1985”
Fish and Wildlife Division
Department of Natural Resources and
Energy
P.O. Box 6000
Fredericton, New Brunswick
E3B 5H1

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SPORT FISHING IN NEWFOUNDLAND, 1985

Introduction

Details about sport fishing in Newfoundland in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the provincial Wildlife Division of the Department of Culture, Recreation and Youth, in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "Survey of Sport-fishing in Newfoundland in 1975" and subsequently the second was reported in the "1980 Survey of Sport Fishing in Newfoundland". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic infor-

mation on the Newfoundland sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work

together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Seventy-one percent (1,268) of the questionnaires sent to residents who had fished and to nonresidents who had purchased angling licences in Newfoundland in 1985 were completed and returned to provide the

basis for the information given in this report. Resident anglers, 18 years of age and over, were identified in a telephone pre-screening survey conducted in early December 1985. A stratified, random sample of 4,000 households was contacted in order to obtain the sample of anglers to whom questionnaires were sent. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in Newfoundland was developed.

The Resource Base

Newfoundland's 370,370 km² of rugged and varied terrain are highlighted by thousands of rivers, ponds, and lakes, which together comprise 34,033 km² of water surface. This freshwater resource is complemented by a 17,538 km coastline, the longest of any province.

Newfoundland's ponds, rivers and lakes are home to a wide range of attractive sport fish, chief among which is the brook or speckled trout. Although, generally small (1/4 to 1/2 pound is an average weight),

brook trout weighing 1 to 2 pounds are frequently taken throughout the island. In Labrador, specimens weighing up to 10 pounds are landed each year.

Like the brook trout, Atlantic salmon is a mainstay of the Newfoundland freshwater sport fishery. There are over 155 "schedule" salmon rivers in the province, where the fish can be taken by properly licensed anglers. In rivers like the Gander, Exploits, Humber, Harry's and Terra Nova, they grow up to 20 pounds in weight. Newfoundland's rivers and lakes also offer rainbow trout, Arctic char, brown trout, black salmon, American smelt and American eel. Labrador offers excellent northern pike and lake whitefish.

The province's estuarial waters (including the brackish portions of rivers, ocean shoreline and wharves extending into the ocean) are fished throughout the year, primarily by younger anglers in search of Atlantic tomcod, winter flounder, cunner, smelt and eel. Sea-run species of the brook and brown trout, Arctic char and Atlantic salmon are also sought. Brown trout weighing up to 20 pounds have been taken on the Avalon Peninsula of the island. In winter, anglers test their luck and

mettle in pursuit of tomcod, sea trout, smelt, Atlantic cod and silver hake through the frozen ice of the many bays and "tickles".

Finally, Newfoundland's offshore oceans support large numbers of cod, Atlantic mackerel and Atlantic herring for those willing and hardy enough to brave the frigid and often unpredictable waters. The big game tuna fishery, which once attracted sportsmen from across the country, has declined in recent years due to a world-wide depletion of stocks.

Angler Profile

There were 101,799 individuals who comprised Newfoundland's adult angling population in 1985, 97,792 of whom were residents of the province and who were active anglers, having fished in 1985. The remaining 4,007 were individuals who purchased a nonresident angling licence to fish in the province (Resident anglers do not require a licence to fish in Newfoundland). Approximately 93% or 3,851 of these non-residents fished (Table 1). As well, 62,278 children under the age of 18 living in licensed anglers' households also fished, bringing the total population of active anglers in the province to 163,921. The impact on

Table 1. Numbers and characteristics of anglers in Newfoundland in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a)				
- Adults	97,792	2,525	1,482	101,799
Active Adult Anglers				
- Males	75,961	2,265	1,362	79,588
(Average Age, Years)	39	44	49	39
- Females	21,831	146	78	22,055
(Average Age, Years)	38	44	51	38
Total	97,792	2,411	1,440	101,643
Children (b)	61,718	390	170	62,278
Total Active Anglers				
- All Ages	159,510	2,801	1,610	163,921

(a) Individuals who fished or held an angling licence in Newfoundland (Residents do not require a licence to fish). This group provides the basis for the statistical information presented in this bulletin.

(b) Individuals under 18 years of age.

(c) Canadians who live in provinces/territories other than Newfoundland and who fished in Newfoundland in 1985.

Newfoundland's sport fishery of the large number of anglers under 18 years of age, who are not covered by this survey is probably considerable. Seventy-eight percent of the active resident adult anglers and 94% of the nonresidents were male (Figure 1).

Approximately 63% of the non-resident anglers in 1985 were Canadians, mainly from Nova Scotia, Québec, Ontario and New Brunswick. Most of the remaining non-resident anglers were United States citizens who came for the most part, from the New England, Mid Atlantic and South Atlantic regions (Table 2 – Figure 2).

Fishing Effort

Angling in Newfoundland is a major recreational activity. Anglers fished a total of about 2.4 million days in 1985 (Table 3). On the average, each angler spent 23 days fishing in 1985. Resident anglers fished an average of 24 days, while

Table 2. Origin of nonresident licensed anglers in Newfoundland in 1985.

Province-State Group	Number
Canadian	
Prince Edward Island	25
Nova Scotia	993
New Brunswick	299
Quebec	591
Ontario	556
Manitoba	23
Saskatchewan	13
Alberta	17
British Columbia	8
Canadian Total	2,525
Non-Canadian	
New England, U.S.A.	616
Mid-Atlantic, U.S.A.	318
East North Central, U.S.A.	100
West North Central, U.S.A.	25
Mountain, U.S.A.	39
Pacific, U.S.A.	51
South Atlantic, U.S.A.	207
East South Central, U.S.A.	16
West South Central, U.S.A.	43
U.S.A. – Other States	10
Other Countries	57
Non-Canadian Total	1,482
Grand Total	4,007

Fig. 1. Sex composition of active anglers.

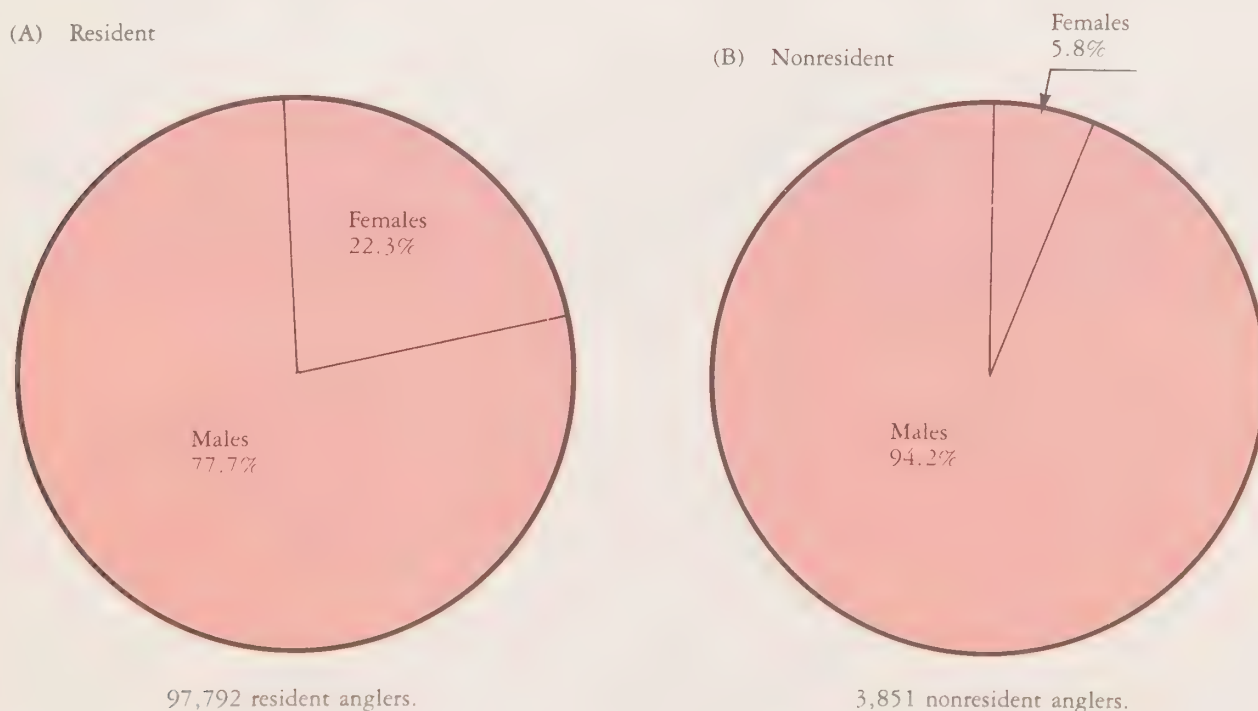


Fig. 2. Regional distribution of United States residents who held Newfoundland angling licences in 1985.



Table 3. Angling effort (in angler days) by season in Newfoundland in 1985.

Season	Resident	Nonresident	Total
January – March	438,133	30	438,163
April – June	823,508	5,585	829,093
July – September	1,048,428	21,148	1,069,576
October – December	36,080	—	36,080
Total	2,346,149	26,763	2,372,912

nonresidents spent an average of 7 days at their sport.

Most fishing (80%) occurred during the period April through September. During that time 80% of resident and just under 100% of nonresident fishing effort was expended. Almost half of all effort occurred during July, August, and September. As might be expected, nonresidents were most active during

these summer months, expending 80% of their fishing effort during that time.

For the purposes of the survey, Newfoundland was divided into seven fishing regions. Of these, the Avalon Peninsula region was by far the most heavily fished, with twice as many angler days as any other region. The pressure on this region was largely the result of its popularity with resident anglers, who

spent approximately 38% of their fishing time there. In contrast, nonresident anglers preferred the Labrador region, spending approximately 40% of their fishing time in that area. The Humber Northeast, Central Bonavista, and Southwest Central Peninsula regions were also popular fishing areas, with 18%, 14% and 14% respectively of total fishing effort expended there (Figure 3).

Fig. 3. Percentage of angler-days expended by anglers in each fishing area of Newfoundland in 1985.

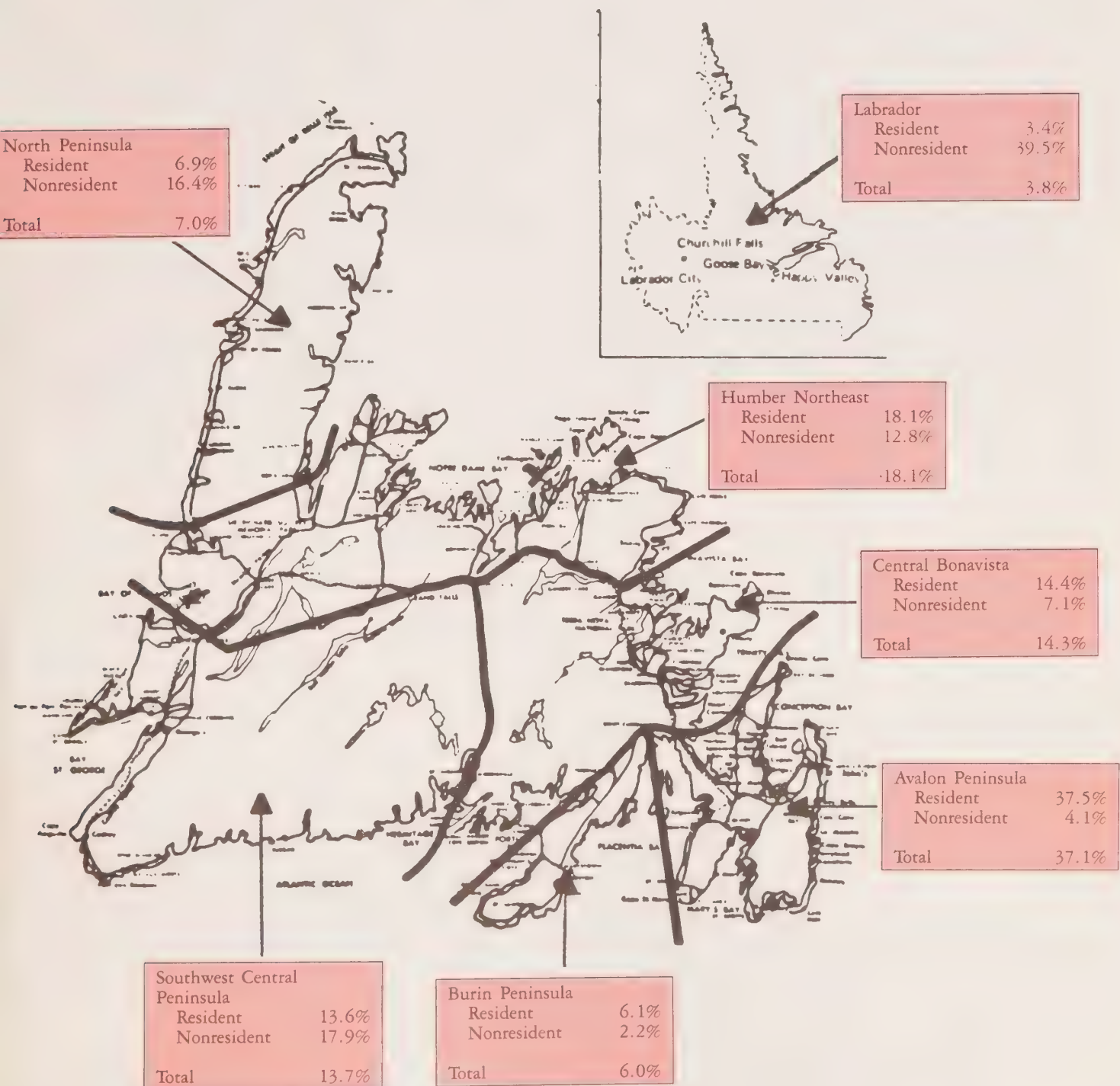


Table 4. Numbers of fish caught and retained by species in Newfoundland in 1985.

Fish Species	Resident	Nonresident	Total
Brook trout	6,254,060	34,080	6,288,140
Cod	2,037,497	2,832	2,040,329
Smelt	1,540,636	194	1,540,830
Brown trout	630,346	1,610	631,956
Sea trout	484,923	3,548	488,471
Rainbow trout	385,672	2,464	388,136
Mackerel	205,390	104	205,494
Atlantic salmon	80,328	3,308	83,636
Landlocked salmon	80,615	3,278	83,893
Tomcod	114,435	129	114,564
Arctic char	18,478	1,198	19,676
Other freshwater fish	301,411	4,131	305,542
Other saltwater fish	183,982	4,092	188,074
Total Number Retained	12,317,773	60,968	12,378,741
Weight of Fish Retained (in lbs)	10,591,513	88,598	10,680,111

Harvest

The recreational fishery of Newfoundland is one of significant importance. In 1985, anglers caught an estimated 15.3 million fish of all species and retained 12.4 million of

them (Table 4). These fish weighed approximately 4.8 million kilograms or 10.7 million pounds. Resident anglers caught 99% of the fish harvested (by number). Brook trout, cod and smelt were the most widely taken species, accounting for 80% of the harvest by number (Figure 4).

Of the 122 fish retained on average, 62 were brook trout, 20 were cod, 15 were smelt, 15 were other trout and 10 were other species. Trout, salmon and cod, in order of priority, were the species most sought after by resident and nonresident anglers (Table 5).

Fig. 4 Proportion of fish (by number) retained by active anglers in Newfoundland in 1985.

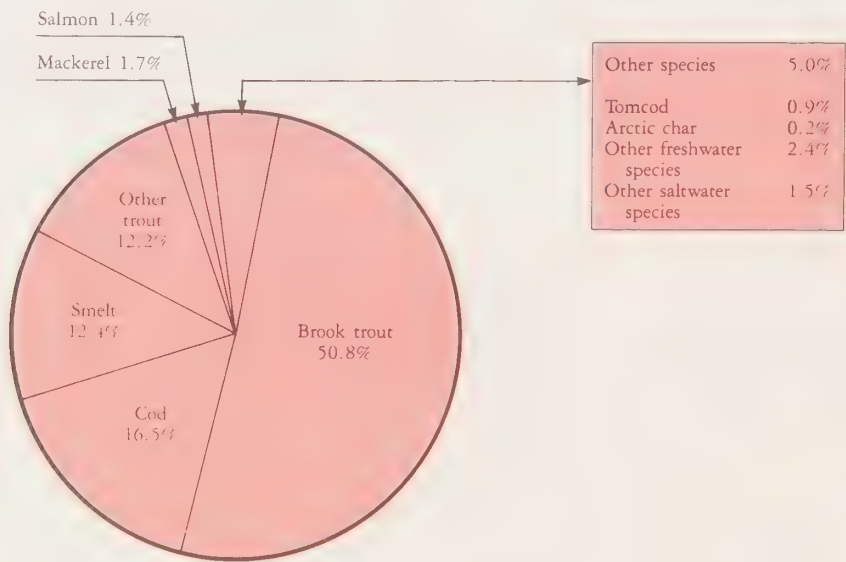


Table 5. Distribution of species preference indicated by anglers in Newfoundland in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Trout	64.5	51.4	64.0
Salmon	16.9	39.1	17.7
Cod	12.6	2.2	12.2
Smelt	2.2	—	2.1
Mackerel	1.7	—	1.6
Arctic Char	0.6	5.7	0.8
Tomcod	0.2	—	0.2
Caplin	0.2	—	0.2
Bass	0.2	—	0.2
Other Species	0.9	1.6	1.0
Total	100.0	100.0	100.0

Discussion

Ninety-one percent of the Newfoundland resident anglers and 35% of the nonresidents who held Newfoundland sport fishing licences in 1985, had also fished in the province in 1984 (Table 6). In addition, 80% of the resident and 21% of the nonresident anglers fished in Newfoundland at the time of the previous survey 5 years ago. Twenty percent of the nonresident anglers indicated Newfoundland was the only place they fished in 1985. Only 1,549 resident anglers (2% of adult resident anglers) fished outside Newfoundland in 1985, chiefly in the

Yukon and Northwest Territories, and usually while on vacation, at the cottage, or on business (Table 7).

Nonresident anglers made 8,307 trips to Newfoundland in 1985, or about two trips per angler of which 58% were for fishing (Table 8). On average, they fished on one of these trips. For 76% of their fishing trips, fishing was the main reason for visiting the province. Seventy-eight percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 9 nights). On these trips they stayed mostly with friends and relatives (26% of the time) or in

fishing lodges and camps (25% of the time).

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in Newfoundland. The natural beauty of the province, the quality of the water, favourable weather conditions, and access to wilderness areas were important components of the environmental factor. Other important factors were the opportunity to fish for wild (as opposed to hatchery) fish, ability to escape from work or household routine and privacy from other fishing parties. Anglers ascribed little importance to catching the desired species, the size or number of fish caught and to catching fish as a source of food (Table 9).

In 1985, 25% of resident anglers also hunted big game in the province. Thirty-eight percent hunted small game, while 30% hunted birds (Table 10). Approximately 4% of adult resident anglers, were members of a national or provincial wildlife organization or local fish and game club; 328 anglers indicated membership in the Newfoundland Wildlife Federation, 1,438 indicated membership in the Canadian Wildlife Federation, and 2,347 indicated membership in a private club or association (Table 11).

Approximately 90% of active nonresident anglers indicated they would return to Newfoundland to fish in the future (Table 12). Sixty-

Table 6. Fishing activity in Newfoundland during the last five years (based on angler population in 1985).

Year of Activity	Resident	Non resident	All Anglers
	%	%	%
1980	79.6	20.9	77.3
1981	82.1	24.1	79.9
1982	85.6	26.3	83.3
1983	89.3	33.9	87.2
1984	91.3	35.1	89.1

Table 7. Reasons for residents of Newfoundland fishing outside the province in 1985.

Reasons	Number	%
On Vacation, Business etc.	1,192	76.9
Other Reasons	279	18.0
No Opinion	78	5.1
Total	1,549	100.0

Table 8. Trip characteristics of nonresident anglers in Newfoundland in 1985.

Characteristics	Number
Trips to Newfoundland – All Reasons	8,307
Fishing Trips to Newfoundland	4,797
– %	58
Days Spent For All Reasons	48,893
Days Fished	26,762
– %	55
Fishing Trips – Main Reason for Visit	3,660
– Secondary Reason	956
– Decided Upon After Arrival	181
Day Trips for Fishing	1,034
Overnight Trips for Fishing	3,764
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	25.8
Tent or Trailer	12.0
Cottages	3.9
Camping in Provincial Parks	7.7
Camping on Crown Land	2.9
Camping in Commercial Camp Grounds	2.1
Fishing Lodge or Camps	25.6
Commercial Accommodation	14.3
Other Accommodation	5.7
Total Nights Spent on Fishing Trips	34,915

Table 9. Relative importance of factors affecting fishing enjoyment in Newfoundland in 1985.

Factors	Ranking Score		
	Residents	Nonresidents	All Anglers
1. Beauty of Surroundings	12.9	12.6	12.9
2. Quality of Water	12.3	12.4	12.3
3. Weather Conditions	11.5	7.0	11.3
4. Access to Wilderness	9.9	10.9	10.0
5. Angling for Wild Fish	9.8	11.5	9.8
6. Escape Routine	9.7	10.4	9.7
7. Privacy	9.3	10.7	9.4
8. Catch Species Desired	8.2	9.4	8.2
9. Size of Fish Caught	6.2	7.0	6.3
10. Number of Fish Caught	5.9	6.6	5.9
11. Catch as Source of Food	4.3	1.5	4.2

Table 10. Wildlife related activities of Newfoundland residents in 1985.

Activity	%
Hunting –	
1. Big Game	25.0
2. Small Game	38.2
3. Wildlife Birds	30.1
4. Nature Photography	19.5
5. Bird Watching	16.1
6. Feeding Wildlife	19.8

two percent of nonresident active anglers said they would not have come to the province if there were no fishing opportunities in Newfoundland in 1985, while 28% said they would have substituted other activities and approximately 9% would have reduced the length of their trip (Table 13). Overall, a majority of 64% of nonresident active anglers rated the quality of fishing in Newfoundland as good to excellent; 20% rated fishing as fair and 13% rated the quality as poor. (Table 14).

Table 11. Membership organization of Newfoundland residents in 1985.

Organization	No.	%
Newfoundland Wildlife Fed.	328	0.3
Canadian Wildlife Fed.	1,438	1.5
Private Club or Assoc.	2,347	2.4

Table 12. Projected future participation of active nonresident anglers in Newfoundland.

Return	No.	%
Yes	3,476	90.2
No	237	6.2
No Opinion	138	3.6
Total	3,851	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in Newfoundland in 1985.

Activity	No.	%
Stay Shorter Time	332	8.6
Substitute Other Activities	1,061	27.6
Not Come at All	2,379	61.8
No Opinion	79	2.0
Total	3,851	100.0

Table 14. Attitude of active non-resident anglers on the quality of fishing in Newfoundland in 1985.

Rating	No.	%
Excellent	715	18.6
Very Good	850	22.1
Good	906	23.5
Fair	773	20.1
Poor	491	12.7
No Opinion	116	3.0
Total	3,851	100.0

Expenditures and Investments

In 1985, anglers spent \$36.2 million in Newfoundland on activities and supplies directly connected with their sport (Table 15). Residents spent a total of \$32.8 million, or an average of \$335 per active

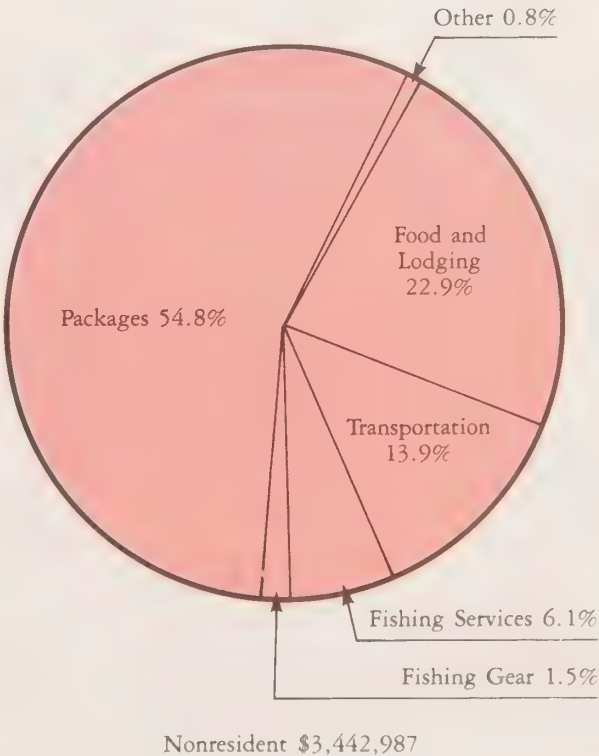
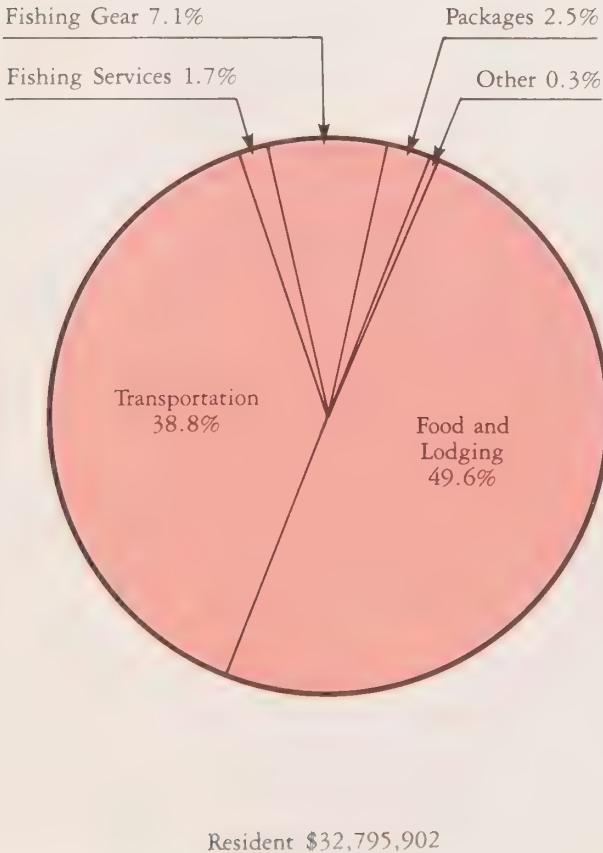
Table 15. Expenditures directly attributable to sport fishing in Newfoundland in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	16,255,232	788,984	17,044,216
Transportation	12,708,477	478,968	13,187,445
Fishing Services	573,545	208,861	782,406
Fishing Gear	2,314,687	54,367	2,369,054
Packages	817,561	1,885,924	2,703,485
Other	126,400	25,883	152,283
Total	32,795,902	3,442,987	36,238,889
Average Per Active Angler	335.36	894.05	356.53
Average Per Angler-day	13.98	128.65	15.27

angler. Nonresidents spent \$3.4 million, or \$894 per active angler. Food, lodging and transportation accounted for 88% of the expenditures of resident anglers and 37% of the

expenditures of nonresident anglers. (Figure 5). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 55% of the nonresident expenditures.

Fig. 5. Proportion of expenditures attributable to sport fishing in Newfoundland in 1985.

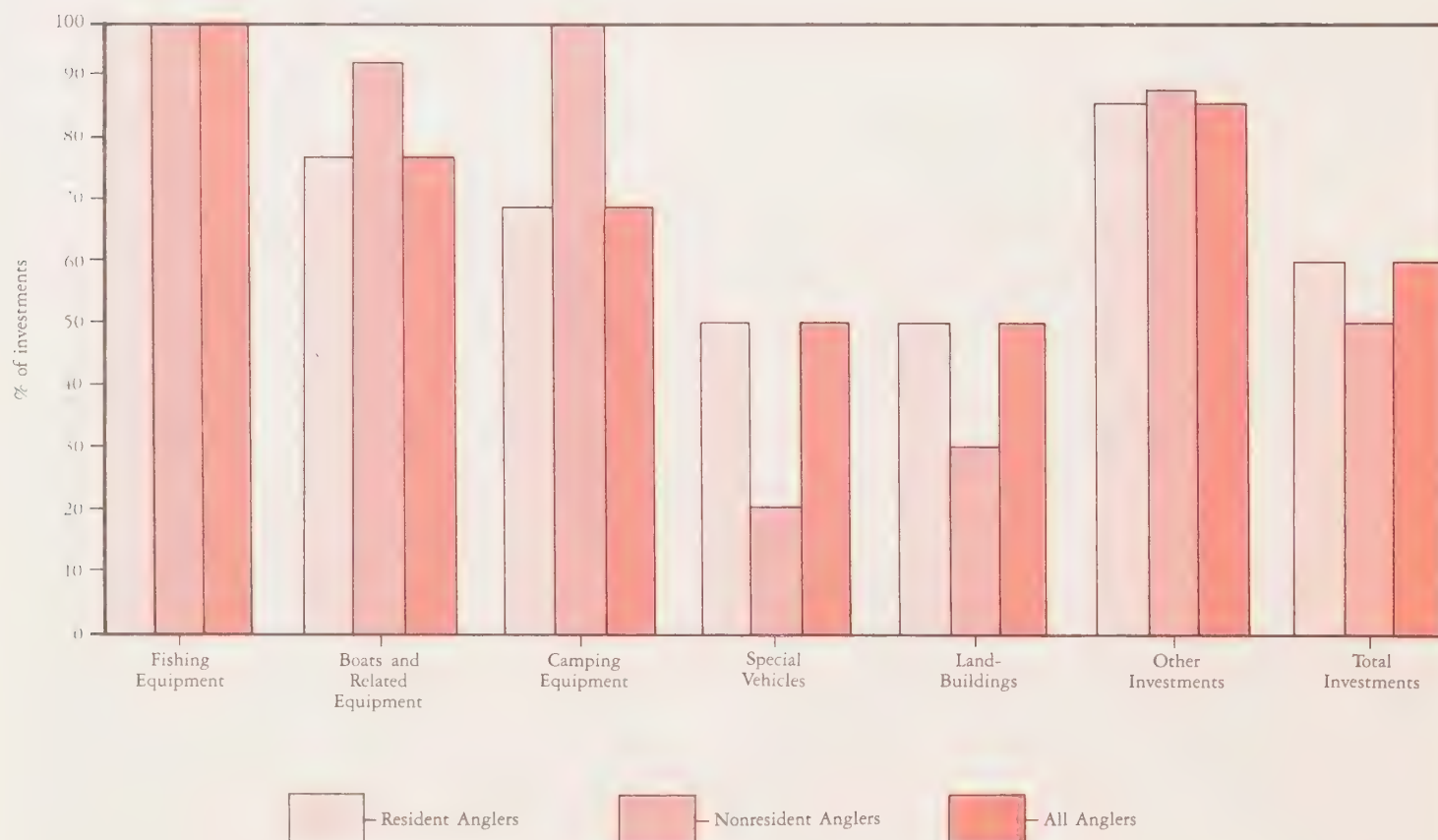


Anglers in Newfoundland invested \$65.1 million on major durables and property in 1985 (Table 16), of which \$39.7 million, or 61% was attributed to sport fishing activities (Figure 6). The average investment of active resident anglers was \$662 and the average investment of active nonresidents was \$99. Just under 100% of the investments were made by resident anglers. Special vehicles (ATV's, snowmobiles, camper trucks, etc.) were a popular commodity, attracting 39% of investment dollars. Land and buildings accounted for a further 26% of these investments. Newfoundland residents and nonresidents, indicated that 61% and 51% respectively, of their purchases and investments were for sport fishing.

Table 16. Major purchases or investments relating in whole or in part to sport fishing in Newfoundland in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	3,208,931	39,048	3,247,979
Boats and Related Equipment	10,267,011	52,554	10,319,565
Camping Equipment	6,431,324	20,298	6,451,622
Special Vehicles (ATV's etc)	25,559,827	96,232	25,656,059
Land-Buildings	16,770,389	144,827	16,915,216
Other	2,533,068	26,400	2,559,468
Total Expenditures	64,770,550	379,359	65,149,909
Average Per Active Angler	662.33	98.51	640.97
Total Attributable to Sport fishing	39,512,856	195,208	39,708,064
Average Per Active Angler	404.05	50.69	390.66

Fig. 6. Proportion of purchases or investments made by anglers in Newfoundland attributable to sport fishing in 1985.



Overall, anglers spent a total of \$101.4 million on goods and services in 1985, of which \$75.9 million, or 75% was directly attributable to sport fishing in Newfoundland.

Willingness to Pay

Active anglers were asked "if your fishing costs had been higher in Newfoundland in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?" Choices were given between \$1.00 and \$100.00 per day and the results are shown in Table 17. Twenty-eight percent indicated they were not willing to pay any additional costs, 66% would have stopped fishing when their additional daily costs reached \$10, 82% would have stopped fishing when their additional daily costs reached \$20, 89% when they reached \$30, 91% when they reached \$40, 95% when they reached \$50, and all anglers would have stopped fishing when their additional daily costs reached \$100. This means that on average, 28% of

the anglers would have stopped fishing when their daily costs exceeded the 1985 daily average of \$15.27 (Table 15) and all anglers would have stopped when their daily costs became \$115.27. When extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in Newfoundland in 1985 was approximately \$40.3 million.

Conclusions

The results of the 1985 survey of sport fishing in Newfoundland confirm that it is a significant form of outdoor recreation and an important socio-economic component of the natural resource sector in the province. It is estimated anglers spent \$36.2 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$65.1 million on major durables and property, of which \$39.7 million was used for sport fishing. In all, anglers invested a

total of \$101.4 million in 1985, of which \$75.9 million was directly attributed to sport fishing in Newfoundland.

Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact of sport fishing within Newfoundland was \$114 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$40.3 million in total, above their current costs in 1985, before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 101,643 adults fished for sport in Newfoundland in 1985. More than 97,792 of these active adult anglers were residents of the province. Based on the population

Table 17. Willingness of active anglers to pay additional costs for fishing in Newfoundland in 1985.

Additional Cost Per Day	Resident	Nonresident	Total
	%	%	%
\$0.00	27.9	31.4	28.1
\$1.00	29.7	34.0	29.9
\$2.00	31.7	34.5	31.8
\$3.00	32.9	35.1	33.0
\$4.00	34.4	35.4	34.4
\$5.00	45.5	39.6	45.3
\$7.50	46.8	41.0	46.6
\$10.00	66.3	52.5	65.8
\$20.00	83.0	66.9	82.4
\$30.00	89.7	77.3	89.3
\$40.00	91.6	82.2	91.3
\$50.00	94.7	93.2	94.7
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$39,738.1	\$605.8	\$40,343.9

estimate of 390.8 thousand* individuals 18 years of age and over, one Newfoundland resident adult in four fished in 1985. Anglers fished a total of 2.4 million days in 1985 and they harvested 12.4 million fish of all species. These fish weighed 4.8 million kilograms or 10.7 million pounds.

Newfoundland anglers indicated that they were more concerned about

the fishing experience than they were about catching fish. They rated natural beauty of the province and water quality as the two most important factors while size and number of fish were rated nine and ten, respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average Newfoundland angler in 1985 was 39 years old, strongly preferred to fish for brook trout and felt that natural beauty of surroundings and water quality were the most important factors influencing a day's fishing. This average angler fished 23 days, while spending \$747 and catching 151 fish. One hundred and twenty-two of these fish, weighing a total of 105 pounds (47.6 kilograms) were kept.

* Statistics Canada – Postcensal Annual
Estimates of Population, June 1985 –
Volume 3.

Big Falls, Upper Humber River, Newfoundland.



Department of Regional Industrial Expansion Photo

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Wildlife Division
Department of Culture,
Recreation and Youth
St. John's, Newfoundland
A1C 5T7

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This bulletin is a periodic publication produced by the Communications Directorate. It is intended to provide information on the socio-economic aspects of sport fishing in Canada and on the related conservation, management and development of recreational fisheries. Reader comment and enquiries should be directed to:

"Sport Fishing in Newfoundland, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Newfoundland, 1985"
Wildlife Division
Department of Culture, Recreation
and Youth
Building 810, Pleasantville
St. John's, Newfoundland
A1C 5T7



SPORT FISHING IN MANITOBA, 1985

Introduction

Details about sport fishing in Manitoba in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the provincial Department of Natural Resources in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sportfishing in Manitoba" and subsequently the second was reported in the "1980 Survey of Sportfishing in Manitoba". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic information on the Manitoba sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the com-

mitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Fifty-nine percent (2,249) of the questionnaires sent to persons who had purchased angling licences in Manitoba in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

Eighty-four species of freshwater fish inhabit the lakes and

streams of Manitoba, of which 20-25 are of main interest to anglers. Although walleye is the most popular sport fish in the province, northern pike, lake trout, smallmouth bass, whitefish, burbot, yellow perch, goldeye and channel catfish are also available. For the more adventuresome, arctic grayling and lake sturgeon offer a unique angling experience.

Manitoba has 55,000 lakes covering 112,000 square kilometres, or 17% of the province's surface area. One-third of this area is contained within Lakes Winnipeg, Winnipegosis, and Manitoba. Most of the lakes are in the northern half of the province and tend to be relatively small.

There is a thriving lodge industry in Whiteshell and Nopiming Parks and in the northeast part of the province. Lodge operators have led the way in establishing resource conservation programs, such as one-trophy-only and no-fish-kill programs, on their lakes.

Angling Profile

There were 187,172 licensed adult anglers in Manitoba in 1985, 78% (146,863) of whom were residents of the province (Table 1).

Table 1. Numbers and characteristics of anglers in Manitoba in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a) – Adults	146,863	7,730	32,579	187,172
Active Adult Anglers				
– Males	106,910	6,155	28,961	142,026
(Average Age, Years)	38	38	46	39
– Females	28,544	1,099	3,345	32,988
(Average Age, Years)	35	39	44	36
Total	135,454	7,254	32,306	175,014
Children (b)	56,525	3,609	5,050	65,184
Total Active Anglers				
– All Ages	191,979	10,863	37,356	240,198

(a) Individuals who purchased an angling licence in Manitoba. This group provides the basis for the statistical information in this bulletin.

(b) Individuals under 16 years of age.

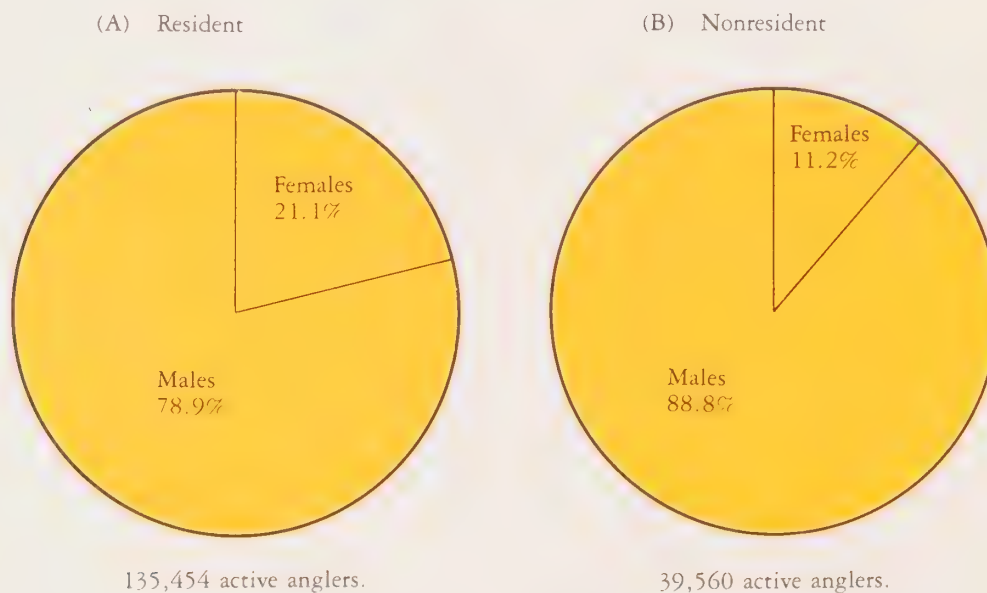
(c) Canadians who live in provinces/territories other than Manitoba and who fished in Manitoba in 1985.

About 92% of the residents and 98% of the 40,309 nonresidents were active anglers having fished in 1985. As well 65,184 children under the age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the province to 240,198. The impact on Manitoba's sport fishery of the large number of anglers under 16 years of age, who are not

covered by this survey is probably considerable. Seventy-nine percent of the active resident adult anglers and 89% of the nonresidents were male (Figure 1). The average age of all anglers was 38 years.

Only about 19% of the nonresident anglers in 1985 were Canadians, mainly from Saskatchewan, Alberta, and Ontario. Most of the remaining nonresident anglers were

Fig. 1. Sex composition of active anglers.



United States citizens who came for the most part, from the West North Central and East North Central regions (Table 2 – Figure 2).

Table 2

Angling in Manitoba is a major recreational activity. Anglers fished a total of about 2.7 million days in 1985 (Table 3). On the average, each angler spent 15.3 days fishing in 1985. Resident anglers fished an average of 17.7 days, while nonresidents spent an average of 7.4 days at their sport.

Most fishing (85%) occurred during the summer period April through September (Figure 3). During that time 83% of resident, 91% of nonresident Canadian and 97% of other nonresident fishing effort was expended. About half of all effort occurred during July, August, and September. Nonresidents were most active during the period April

Table 2. Origin of nonresident licensed anglers in Manitoba in 1985.

Province-State Group	Number
Canadian	
Nova Scotia	77
Quebec	76
Ontario	1,032
Saskatchewan	3,822
Alberta	1,992
British Columbia	689
Northwest Territories	42
Canadian Total	7,730
Non-Canadian	
New England, U.S.A.	80
Mid-Atlantic, U.S.A.	326
East North Central, U.S.A.	6,123
West North Central, U.S.A.	22,620
Mountain, U.S.A.	807
Pacific, U.S.A.	862
South Atlantic, U.S.A.	407
East South Central, U.S.A.	203
West South Central, U.S.A.	1,114
U.S.A. – Other States	37
Non-Canadian Total	32,579
Grand Total	40,309

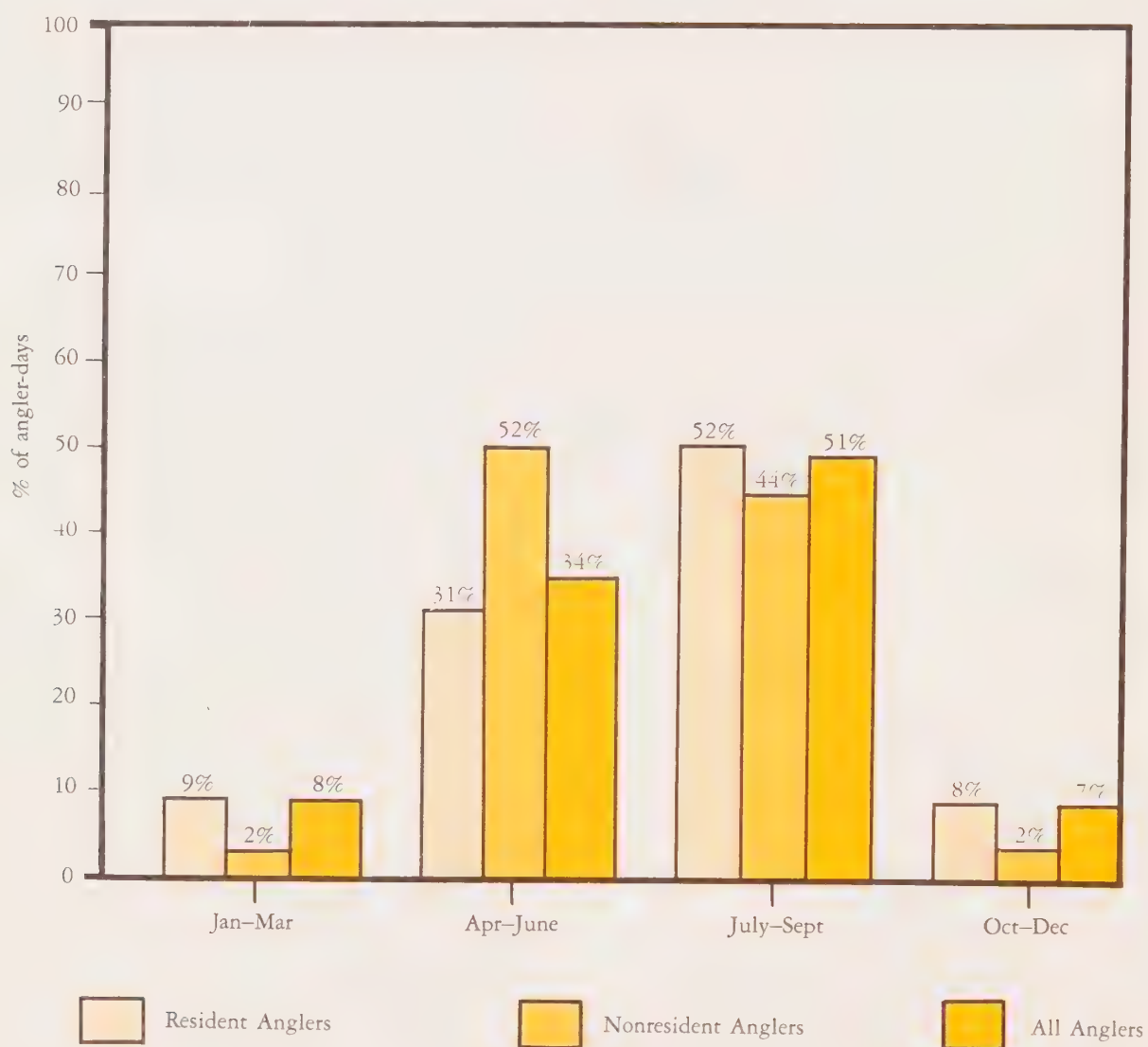
Fig. 2. Regional distribution of United States residents who held Manitoba angling licences in 1985.



Table 3. Angling effort (in angler-days) by season in Manitoba in 1985.

Season	Resident	Nonresident	Total
January – March	213,324	5,801	219,125
April – June	755,158	150,780	905,938
July – September	1,242,401	127,909	1,370,310
October – December	181,930	6,703	188,633
Total	2,392,813	291,193	2,684,006

Fig. 3. Angling effort by season in Manitoba in 1985.



through June, expending 52% of their fishing effort during that time.

Manitoba was divided into seven fishing areas. Resident anglers favoured the Southern, Whiteshell and North Western regions, in that order. Nonresidents showed a distinct preference for the North Western region, spending 43% of their

fishing time there, and another quarter of their time in the Northern region. Overall, the Southern and North Western regions were the most heavily fished (Figure 4).

Harvest

The recreational fishery of Manitoba is one of significant impor-

tance. In 1985, anglers caught an estimated 9.6 million fish of all species and retained 4.3 million of them (Table 4). These fish weighed approximately 4.4 million kilograms or 9.7 million pounds. Resident anglers caught 85% of the fish harvested (by number). Walleye and pike were the most widely taken

Fig. 4. Percentage of angler-days expended by anglers in each fishing area of Manitoba in 1985.

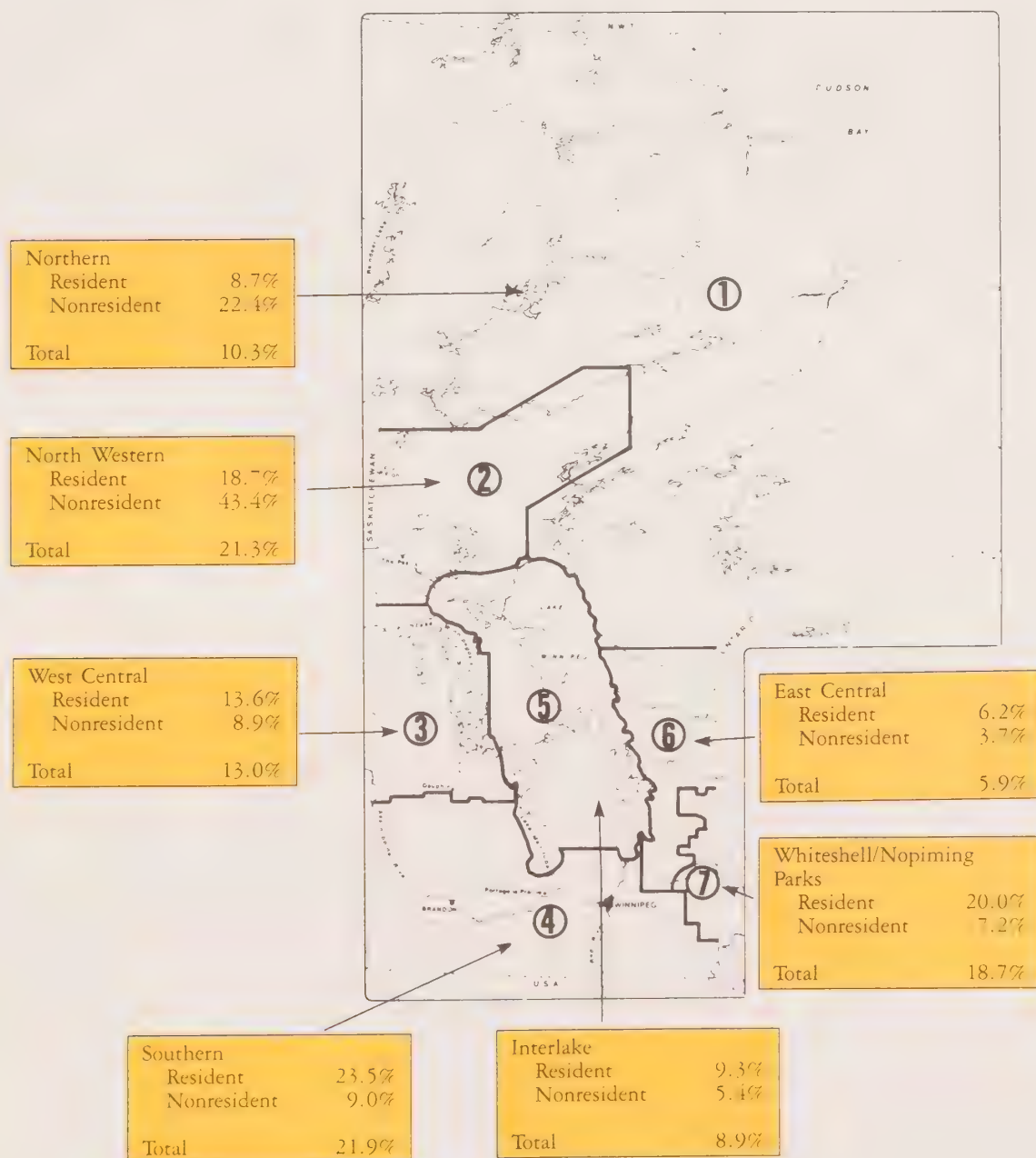


Table 4. Numbers of fish caught and retained by species in Manitoba in 1985.

Fish Species	Resident	Nonresident	Total
Walleye	2,120,705	344,968	2,465,673
Pike	719,625	223,643	943,268
Lake trout	79,162	28,221	107,383
Rainbow trout	124,169	5,793	129,962
Brook trout	12,674	1,824	14,498
Bass	67,084	4,062	71,146
Other species	524,856	38,415	563,271
Total Number Retained	3,648,275	646,926	4,295,201
Weight of Fish Retained (in lbs)	7,636,231	2,042,408	9,678,639

Fig. 5 Proportion of fish (by number) retained by active licensed anglers in Manitoba in 1985.

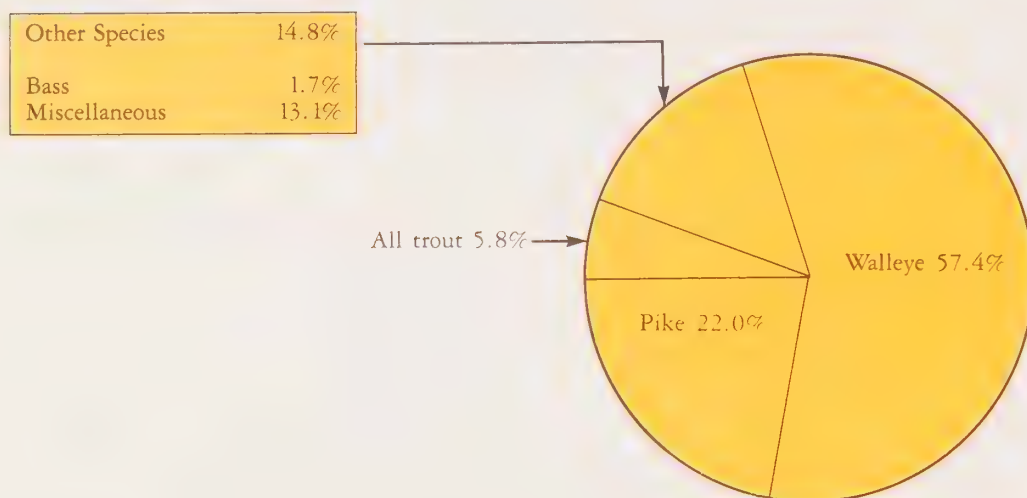


Table 5. Distribution of species preference indicated by anglers in Manitoba in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Walleye	48.5	43.5	47.4
Northern Pike	19.8	32.1	22.5
Trout	17.9	16.9	17.7
Perch	5.0	1.1	4.2
Bass	4.5	3.3	4.2
Catfish	0.7	1.6	0.9
Goldeye	1.1	0.2	0.9
Sauger	0.7	0.1	0.6
Sturgeon	0.6	0.3	0.5
Other species	1.2	0.9	1.1
Total	100.0	100.0	100.0

species, with walleye alone accounting for 57% of the harvest by number (Figure 5). Of the 24 fish retained on average, 14 were walleye,

5 were pike and 5 were other species. Walleye, northern pike and trout were the species most sought after by resident and nonresident

anglers (Table 5).

Eighty-five percent of the Manitoba residents and 50% of the

nonresidents, who held Manitoba sport fishing licences in 1985, had also fished in the province in 1984 (Table 6). In addition, 67% of the resident and 33% of the nonresident anglers fished in Manitoba at the time of the previous survey 5 years ago. Twenty-three percent of the nonresident anglers indicated Manitoba was the only place they fished in 1985. Only 30,000 resident anglers (20% of licensed adult resident anglers) fished outside Manitoba in 1985, chiefly in Ontario and Saskatchewan and usually while on vacation, at the cottage or on business (Table 7).

Nonresident anglers made 159,880 trips to Manitoba in 1985, or about 4 trips per angler of which 41% were for fishing (Table 8). On average, they fished on two of these trips. For 80% of their fishing trips, fishing was the main reason for visiting the province. Seventy-eight percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 7 nights).

The use of accommodations appears to reflect the origins of the nonresident anglers. Approximately 19% of the time they stayed with friends and relatives; 13% of the time they stayed in tents or trailers; and 31% of the time they stayed at fishing lodges or camps.

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in Manitoba. The quality of the water, the natural beauty of the province, and favourable weather conditions were important components of the environmental factor. Also of great importance was the ability to escape from work or household routine. Other important factors were the number and size of fish caught, access to wilderness areas, privacy from other fishing parties and success in catching the desired species. Anglers ascribed little importance to catching fish for food or to angling for wild (as opposed to hatchery) fish (Table 9).

In 1985, 22% of resident anglers also hunted big game in the prov-

Table 6. Fishing activity in Manitoba during the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1980	66.6	33.1	59.4
1981	71.0	36.3	63.6
1982	76.1	37.4	67.7
1983	80.7	45.3	73.1
1984	84.6	50.3	77.2

Table 7. Reasons for residents of Manitoba fishing outside the province in 1985.

Reasons	Number	%
Species Not Available	1,395	4.8
On Vacation, Business, etc.	19,989	68.7
Other Reasons	7,728	26.5
Total	29,112	100.0

Table 8. Trip characteristics of nonresident anglers in Manitoba in 1985.

Characteristics	Number
Trips to Manitoba – All Reasons	159,880
Fishing Trips to Manitoba	64,759
– %	41
Days Spent For All Reasons	555,879
Days Fished	291,193
– %	52
Fishing Trips – Main Reason for Visit	51,632
– Secondary Reason	9,194
– Decided Upon After Arrival	3,933
Day Trips for Fishing	13,981
Overnight Trips for Fishing	50,778
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	18.6
Tent or Trailer	12.9
Cottages	6.9
Camping in Provincial Parks	10.8
Camping on Crown Land	4.1
Camping in Commercial Camp Grounds	5.4
Fishing Lodge or Camps	30.9
Commercial Accommodation	8.6
Other Accommodation	1.8
Total Nights Spent on Fishing Trips	357,393

Table 9. Relative importance of factors affecting fishing enjoyment in Manitoba in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Quality of Water	14.0	12.4	13.7
2. Beauty of Surroundings	13.6	12.3	13.2
3. Escape Routine	11.4	10.5	11.2
4. Weather Conditions	11.7	9.4	11.1
5. Access to Wilderness	9.8	9.5	9.7
6. Privacy	8.9	9.4	9.0
7. Catch Species Desired	8.4	9.1	8.6
8. Number of Fish Caught	6.7	8.8	7.2
9. Size of Fish Caught	6.4	8.5	6.9
10. Angling for Wild Fish	5.9	7.5	6.3
11. Catch as a Source of Food	3.2	2.6	3.1

ince. Thirteen percent hunted small game, while 21% hunted birds (Table 10). Approximately 24% of licensed adult resident anglers were members of a national or provincial wildlife organization or local fish and game club; 13,190 anglers indicated membership in the Manitoba Wildlife Federation, 3,956 indicated membership in the Canadian Wildlife Federation, and 17,673 indicated membership in a private club or association (Table 11).

Table 10. Wildlife related activities of Manitoba residents in 1985.

Activity	%
Hunting —	
1. Big Game	21.8
2. Small Game	12.8
3. Wildlife Birds	20.7
4. Nature Photography	30.0
5. Bird Watching	26.6
6. Feeding Wildlife	28.3

Table 11. Membership organization of Manitoba residents in 1985.

Organization	No.	%
Manitoba Wildlife Fed.	13,190	9.0
Canadian Wildlife Fed.	3,956	2.7
Private Club or Assoc.	17,673	12.0

Approximately 94% of active nonresident anglers indicated they would return to Manitoba to fish in the future, although 68% said they would not return if sport fishing was no longer available in the province (Tables 12 and 13). Overall, a majority of 78% of active nonresident anglers rated the quality of fishing in Manitoba as good to excellent; 15% rated fishing as fair and the remaining 7% rated the quality as poor (Table 14).

Table 12. Projected future participation of active nonresident anglers in Manitoba.

Return	No.	%
Yes	37,259	94.2
No	2,301	5.8
Total	39,560	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in Manitoba in 1985.

Activity	No.	%
Stay Shorter Time	3,523	8.9
Substitute Other Activities	9,012	23.3
Not Come at All	27,025	67.8
Total	39,560	100.0

Table 14. Attitude of active nonresident anglers on quality of fishing in Manitoba in 1985.

Rating	No.	%
Excellent	7,602	19.2
Very Good	12,378	31.3
Good	10,708	27.1
Fair	6,048	15.2
Poor	2,824	7.2
Total	39,560	100.0

Expenditures and Investments

In 1985, anglers spent \$85.4 million in Manitoba on activities and supplies directly connected with their sport (Table 15). Residents spent a total of \$54.1 million, or an average of \$399 per active angler. Nonresidents spent \$31.3 million, or \$792 per active angler. Food, lodging and transportation accounted for 85% of the expenditures of resident anglers and 43% of the expenditures of nonresident anglers (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 46% of the nonresident expenditures.

Anglers in Manitoba invested \$132.3 million on major durables and property in 1985 (Table 16), of which \$73.9 million, or 56% was attributed to sport fishing activities (Figure 7). The average investment of active resident anglers was \$939 and the average investment of active nonresidents was \$129. Ninety-six percent of the investments were made by resident anglers. Manitoba residents, and nonresidents indicated that 55% and 80% respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of \$217.7 million on goods and services in 1985, of which \$159.3 million, or 73% was directly attributable to sport fishing in Manitoba.

Table 15. Expenditures directly attributable to sport fishing in Manitoba in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	23,386,682	8,268,653	31,655,335
Transportation	22,601,335	5,253,115	27,854,450
Fishing Services	1,737,057	2,488,406	4,225,463
Fishing Gear	3,645,626	873,141	4,518,767
Packages	2,048,093	14,363,899	16,411,992
Other	675,040	85,521	760,561
Total	54,093,833	31,332,735	85,426,568
Average Per Active Angler	399.35	792.03	488.11
Average Per Angler-day	22.61	107.60	31.83

Fig. 6. Proportion of expenditures attributable to sport fishing in Manitoba in 1985.

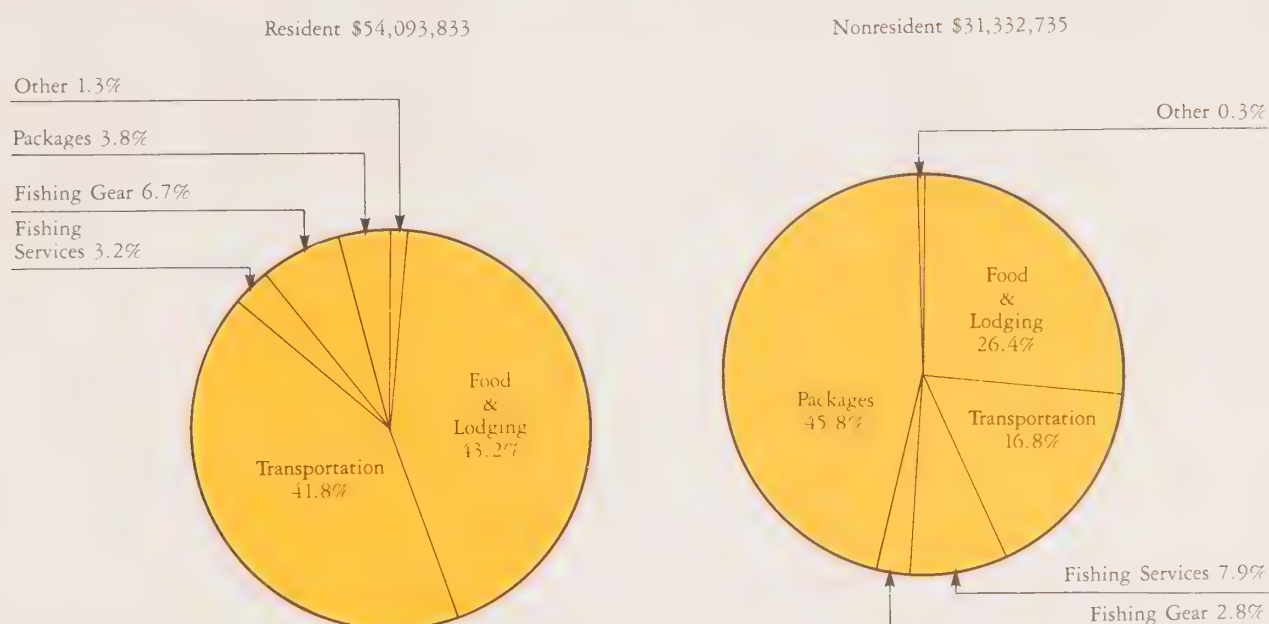
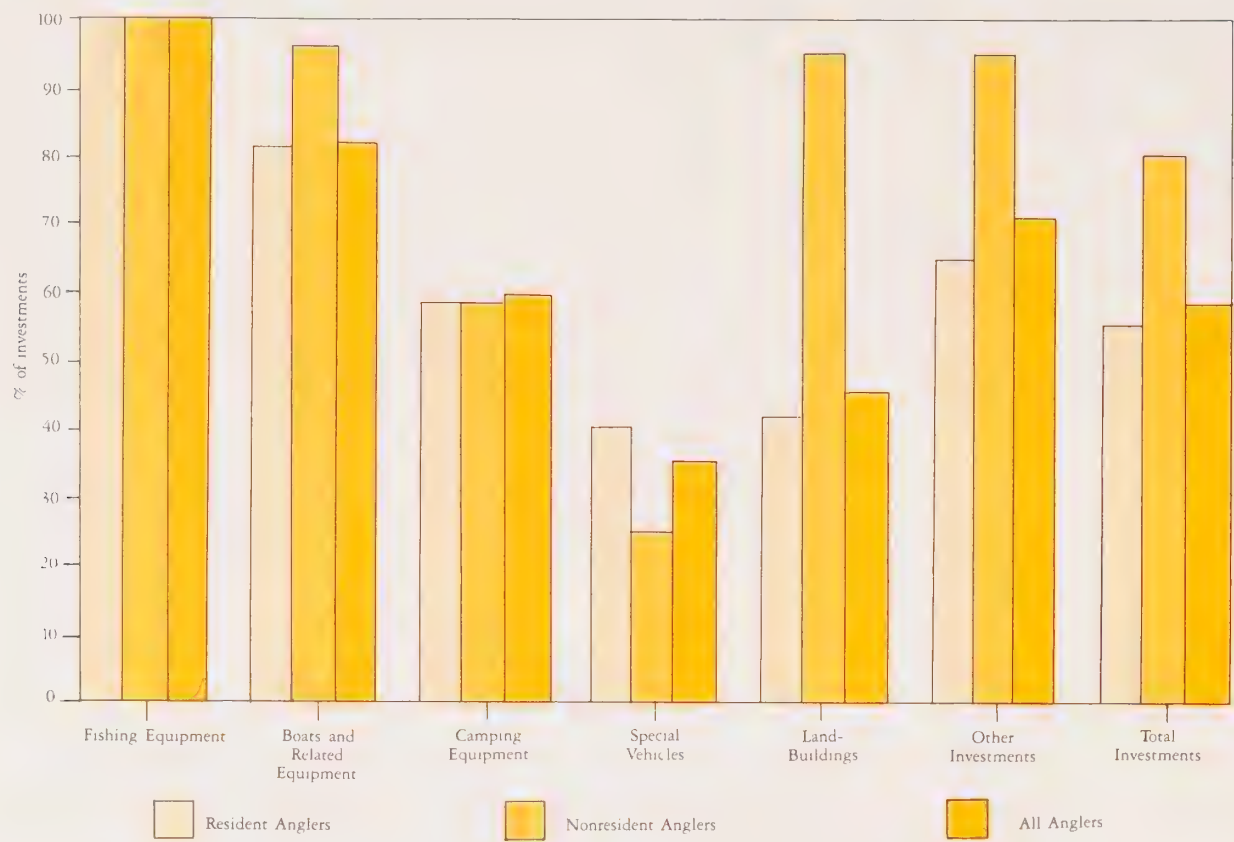


Table 16. Major purchases or investments relating in whole or in part to sport fishing in Manitoba in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	5,127,106	424,266	5,551,372
Boats and Related Equipment	30,699,131	955,384	31,654,515
Camping Equipment	16,643,960	719,968	17,363,928
Special Vehicles (ATV's etc)	41,612,467	907,611	42,520,078
Land-Buildings	30,920,101	1,877,162	32,797,263
Other	2,221,797	199,096	2,420,893
Total	127,224,562	5,083,487	132,308,049
Average Per Active Angler	939.25	128.50	755.99
Total Attributable to Sport fishing	69,789,822	4,080,076	73,869,898
Average Per Active Angler	515.23	103.14	422.10

Fig. 7. Proportion of purchases or investments made by anglers in Manitoba attributable to sport fishing in 1985.



Anglers' Willingness to Pay

Active anglers were asked “if your fishing costs had been higher in Manitoba in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?” Choices were

given between \$1.00 and \$100.00 per day and the results are shown in Table 17. Twenty-one percent indicated they were not willing to pay any additional costs, 57% would have stopped fishing when their additional daily costs reached \$10, 78% would have stopped fishing when their additional daily costs

reached \$20, 87% when they reached \$30, 90% when they reached \$40, 94% when they reached \$50, and all anglers would have stopped fishing when their additional daily costs reached \$100. This means that on average, 21% of the anglers would have stopped fishing when their daily costs exceeded

Table 17. Willingness of active anglers to pay additional costs for fishing in Manitoba in 1985.

Additional cost per day	Resident	Nonresident	Total
	%	%	%
\$0.00	21.1	19.3	20.7
\$1.00	23.1	21.5	22.7
\$2.00	23.9	22.7	23.6
\$3.00	25.6	23.6	25.1
\$4.00	27.0	24.3	26.3
\$5.00	36.7	32.9	35.8
\$7.50	38.5	34.4	37.5
\$10.00	58.2	54.7	57.4
\$20.00	78.9	73.9	77.8
\$30.00	87.3	84.3	86.7
\$40.00	90.0	87.6	89.5
\$50.00	94.3	94.7	94.4
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$48,341.7	\$4,963.0	\$53,304.7

the 1985 daily average of \$31.83 and all anglers would have stopped when the daily costs became \$131.83. When extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in Manitoba in 1985 was approximately \$53.3 million.

Resident licence sales remained virtually unchanged from 1980, although the number of active anglers rose slightly by approximately 2% (Table 18). Nonresident licence sales decreased by 17% as did the number of active anglers. Total days fished by all licensed anglers was down only 6%.

The total harvest of all species combined was down 23% from 5.6 million in 1980 to 4.3 million in 1985 primarily because of decreased harvests of northern pike by 54%.

Direct expenditures by all licensed anglers was 77% higher than in 1980. The major purchase and investment category was up 131% and likewise, the amount totally attrib-

utable to sport fishing was up 106% but some of this difference was likely due to different wording of the question with a broader range of suggested categories in 1985.

The results of the 1985 survey of sport fishing in Manitoba confirm that it is a significant form of outdoor recreation and an important socio-economic component of the natural resource sector in the province. It is estimated anglers spent \$85.4 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$132.3 million on major durables and property, of which \$73.9 million was used for sport fishing. In all, anglers invested a total of \$217.7 million in 1985, of which \$159.3 million was directly attributed to sport fishing in Manitoba.

Economists generally agree that the first round of expenditures in most segments of the business world

do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact on sport fishing within Manitoba was \$239 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$53.3 million in total above their current costs in 1985 before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 175,014 adults fished for sport in Manitoba in 1985. More than 135,400 of these active adult anglers were residents of the province. Based on the population estimate of 813,000* individuals 16 years of age and over, one resident in six fished in 1985. Anglers fished a total of 2.7 million days in 1985, and they harvested 4.3 million fish of all species. These fish weighed

* Statistics Canada - Postcensal Annual Estimates of Population, June 1985 - Volume 3.

Table 18. 1980-1985 comparisons of angler characteristics, days fished, species harvest and expenditures in Manitoba.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	147,250	146,863	- 0.3%	48,550	40,309	- 17.0%	195,800	187,172	- 4.4%
Total Active Adult Anglers	132,869	135,454	1.9%	47,442	39,560	- 16.6%	180,311	175,014	- 2.9%
Total Days Fished ('000)	2,512.1	2,392.8	- 4.7%	341.8	291.2	- 14.8%	2,853.9	2,684.0	- 6.0%
Total Species Caught (1000)	8,220.7	7,257.5	- 11.7%	2,742.3	2,368.9	- 13.6%	10,693.0	9,626.4	- 10.0%
Total Species Caught and Retained ('000)	4,615.0	3,648.3	- 20.9%	956.7	646.9	- 32.4%	5,581.6	4,295.2	- 23.0%
Total Direct Expenditures ('000)	\$30,592.9	\$54,093.8	76.8%	\$17,562.3	\$31,332.7	78.4%	\$48,155.2	\$85,426.6	77.4%
Major Purchases and Investments ('000)	\$55,525.8	\$127,224.6	129.1%	\$1,749.6	\$5,083.5	190.6%	\$57,275.5	\$132,308.0	131.0%
Total Attributable to Sport fishing ('000)	\$34,726.2	\$69,789.8	101.0%	\$1,146.2	\$4,080.1	256.0%	\$35,872.4	\$73,869.9	105.9%

4.4 million kilograms or 9.7 million pounds.

Manitoba anglers indicated they were more concerned about the fishing experience than they were about catching fish. They rated quality of water and natural beauty of the province as the two most important factors, while number and size of fish

were rated eight and nine respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average Manitoba angler in 1985 was 38 years old, strongly preferred to fish for walleye

and felt that quality of water and natural beauty of surroundings were the most important factors influencing a day's fishing. This average angler fished 15 days while spending \$910 and catching 55 fish. Twenty-four of these fish, weighing a total of 55 pounds (25 kilograms) were kept.



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Chief, Primary or Secondary Unit
Communications Directorate
Department of Fisheries and Oceans
375 Wellington Street West
Ottawa, Ontario
K1A 0B2

or

Chief, Primary or Secondary Unit
Regional Office
Department of Fisheries and Oceans
1000-100 Avenue
Winnipeg, Manitoba
R2G 1A6

SPORT FISHING IN THE NORTHWEST TERRITORIES, 1985

Introduction

Details about sport fishing in the Northwest Territories in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The Survey of Sport Fishing in the N.W.T. was a federal-territorial effort, conducted in 1986; at the federal level by the Department of Fisheries and Oceans, Central and Arctic Region in Winnipeg, and the Surveys Unit, Economic and Commercial Analysis Directorate in Ottawa; at the territorial level by the Department of Renewable Resources and the Department of Economic Development and Tourism.

The 1985 survey was the third in a series carried out at five year intervals as part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus, not only does this report provide basic information on the Northwest Territories sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a

second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Sixty-seven percent (1,260) of the questionnaires sent to persons who had purchased angling licences in the Northwest Territories in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, this overall description of sport fishing in the Northwest Territories was developed.

The Resource Base

The Northwest Territories span a geographic area of approximately 3,400,000 square kilometres, of which 173,300 square kilometres are fresh water bodies. Primarily two lakes dominate this area, Great Bear and Great Slave lakes, each comparable in area taking up a total of 59,700 square kilometres. The diversity of lakes, rivers, and geography throughout the territories provide an impressive range of sport fishing opportunities.

The principal species of fish found in the Northwest Territories include lake trout, Arctic charr, Arctic grayling, walleye and northern pike.

Lake trout is the most sought after and perhaps most reputable of the northern species, mainly due to its reputation for often reaching "trophy-size". This is especially appealing to the many anglers visiting the N.W.T. It is found in numerous waters throughout the territories.

Arctic charr are distributed throughout the northern coastal waters of the Arctic Ocean and its connecting rivers. Arctic grayling are abundant in the clear water of most lakes and streams of the N.W.T. as well as along the clear water tributaries of the Mackenzie River.

Walleye, a highly prized recreational species, is restricted to the Mackenzie river systems. Northern pike are typically inhabitants of shallow waters, lakes and streams in the territories.

The tradition for fishing in the Northwest Territories has long been related to its remoteness and nature of its population. It is characterized as a relatively underdeveloped region of Canada with a population of approximately 52,200 persons distributed throughout 64 communities, the largest being the capital of Yellowknife. The package plans offered by its lodge industry give access to a significant nonresident fishery, which greatly enhances tourism.

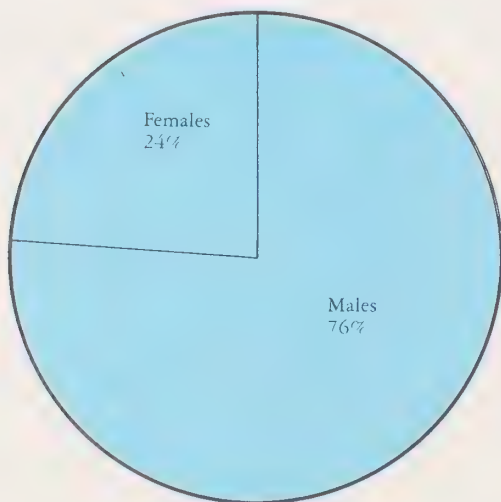
Angler Profile

There were 16,907 licensed adult anglers in the Northwest Territories in 1985, 53% (8,952) of whom were N.W.T. residents (Table 1). About 87% of the residents, and 95% of the 7,955 non-residents (individuals who do not live in the N.W.T., but purchased a N.W.T. fishing licence) fished in 1985. As well, 3,922 children under the age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the territories to 19,271. The impact on the N.W.T.'s sport fishery of the large number of anglers under 16 years of age, who are not covered by this survey, is probably considerable. Seventy-six percent of the active resident adult anglers and 89% of the active adult nonresidents were male (Figure 1). The average age of male anglers was 40 years and of female anglers, 35 years.

Approximately 53% of the non-resident anglers in 1985 were Cana-

Fig. 1. Sex composition of active anglers.

(A) Resident



7,769 resident anglers.

(B) Nonresident



7,580 nonresident anglers.

dians, mainly from Alberta (45%) and Ontario (27%). Most of the remaining nonresident anglers were United States citizens who came for the most part, from the West North Central, East North Central, Pacific and Mountain regions (Table 2 – Figure 2).

Fishing License

Angling in the Northwest Territories is a major recreational activity, providing a total of 172,692 angler-days in 1985 (Table 3), and on average, 11.3 days fishing per angler. Resident anglers fished an average of 15.5 days, while nonresidents spent an average of 6.9 days at their sport.

Table 1. Numbers and characteristics of anglers in the Northwest Territories in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a) – Adults	8,952	4,329	3,626	16,907
Active Adult Anglers				
– Males	5,924	3,490	3,289	12,703
(Average Age, Years)	35	39	49	40
– Females	1,845	542	259	2,646
(Average Age, Years)	32	38	49	35
Total	7,769	4,032	3,548	15,349
Children (b)	3,226	459	237	3,922
Total Active Anglers				
– All Ages	10,995	4,491	3,785	19,271

- (a) Individuals who purchased an angling licence in the N.W.T. This group provides the basis for the statistical information presented in this bulletin.
(b) Individuals under 16 years of age.
(c) Canadians who live outside the Northwest Territories.

Fig. 2. Regional distribution of United States residents who held Northwest Territories angling licences in 1985.



Most fishing (95%) occurred during the summer period April through September (Figure 3). During that time 93% of resident, 98% of nonresident Canadian and over 99% of other nonresident fishing effort was expended. Seventy percent of all effort occurred during July, August, and September. Both residents and nonresidents were most active during this period, expending 65% and 82% respectively of their fishing effort during these summer months.

Fishing effort varied significantly among the eight geographic regions defined for this survey. In large measure, this can be attributed to differences in the size of the resident population in the survey regions. The District of Mackenzie is the most heavily populated district of the N.W.T. and also the most heavily fished. Regions 4 and 5 on Fig. 4 are the geographic regions used in the survey that correspond with this district. Together they attracted 54% of the total fishing effort.

Table 2. Origin of nonresident licensed anglers in the Northwest Territories in 1985.

Province-Census Group	Number
Canadian	
Newfoundland-Labrador	8
Prince Edward Island	26
Nova Scotia	47
New Brunswick	60
Quebec	176
Ontario	1,169
Manitoba	371
Saskatchewan	218
Alberta	1,941
British Columbia	285
Yukon Territory	28
Canadian Total	4,329
Non-Canadian	
New England, U.S.A.	54
Mid-Atlantic, U.S.A.	252
East North Central, U.S.A.	712
West North Central, U.S.A.	940
Mountain, U.S.A.	542
Pacific, U.S.A.	618
South Atlantic, U.S.A.	151
East South Central, U.S.A.	56
West South Central, U.S.A.	234
U.S.A. — Other States	22
Other Countries	45
Non-Canadian Total	3,626
Grand Total	7,955

Fig. 3. Angling effort by season in the Northwest Territories in 1985.

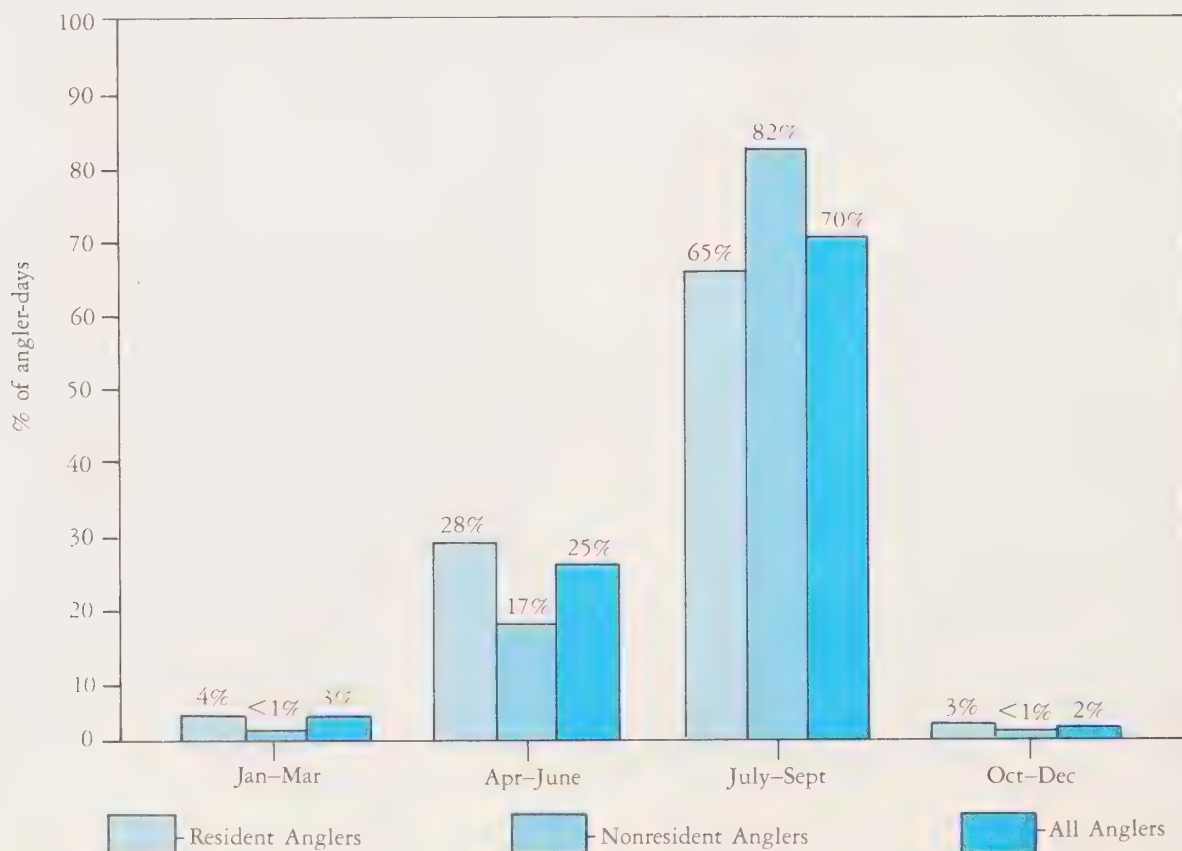


Table 3. Angling effort (in angler days) by season in the Northwest Territories in 1985.

Season	Resident	Nonresident	Total
January – March	4,627	305	4,932
April – June	33,583	9,007	42,950
July – September	79,241	42,476	121,717
October – December	3,284	169	3,453
Total	120,735	51,957	172,692

Fig. 4. Percentage of angler-days expended by anglers in each fishing region of the Northwest Territories in 1985.



Harvest

In 1985, anglers in the Northwest Territories caught an estimated 672,413 fish of all species and retained 188,557 of them (Table 4). These fish weighed approximately 325,714 kilograms. Resident anglers caught 74% of the fish harvested (by number). Lake trout, walleye and northern pike, were the most widely taken species, accounting for 28.6%, 23.5% and 19.7% respectively of the total harvest (Figure 5). Of the 12 fish retained by each an-

gler on average, 4 were lake trout, 3 were walleye, 2 were pike, and 3 were other species. Walleye, trout and Arctic charr, were the most preferred species among resident anglers, while nonresidents favoured lake trout, Arctic grayling and Arctic charr (Table 5).

Nonresidents

Seventy-one percent of the Northwest Territories residents and 22% of the nonresidents, who held

N.W.T. sport fishing licences in 1985, had also fished in the territories in 1984 (Table 6). In addition, 37% of the resident and 11% of the nonresident anglers fished in the territories at the time of the previous survey 5 years ago. More than 25% of the nonresident anglers indicated the N.W.T. was the only place they fished in 1985. Over 1,700 resident anglers (19% of licensed adult resident anglers) fished outside the N.W.T. in 1985, chiefly in British Columbia, Ontario and the Yukon,

Table 4. Numbers of fish caught and retained by species in the Northwest Territories in 1985.

Fish Species	Resident	Nonresident	Total
Lake Trout	35,415	18,446	53,861
Walleye	38,007	6,299	44,306
Pike	29,049	8,202	37,251
Arctic Grayling	13,077	8,866	21,943
Arctic Charr	10,008	6,452	16,460
Other Species	12,611	2,125	14,736
Total Number Retained	138,167	50,390	188,557
Average Number Retained per Active Adult Angler	17.78	6.65	12.28
Weight of Fish Retained (in kgs)	197,662	128,052	325,714
Average Weight Retained per Active Adult Angler (in kgs)	25.4	16.9	21.2

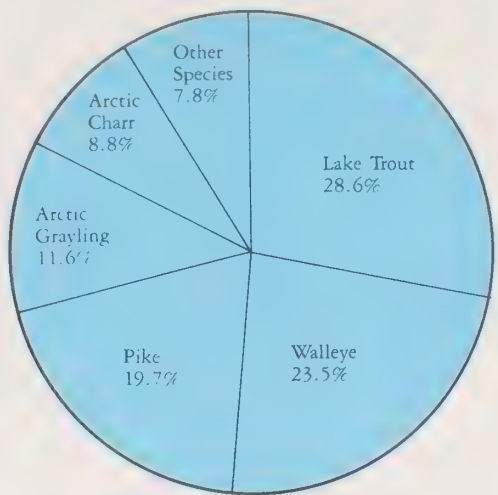
Table 5. Distribution of anglers by the species they most prefer to fish for in the Northwest Territories in 1985.

Species Specified As Most Preferred	Resident	Nonresident	All Anglers
	%	%	%
Lake Trout	15.9	29.0	22.2
Arctic Grayling	15.8	19.9	17.8
Arctic Charr	15.9	19.7	17.7
Walleye	23.7	8.8	16.5
Other Trout	18.9	7.8	13.6
Northern Pike	6.7	14.4	10.4
Lake Whitefish	2.9	0.4	1.7
Other Species	0.2	—	0.1
Total	100.0	100.0	100.0

Table 6. Percentage of anglers licensed to fish in the N.W.T. in 1985 who also fished in the territories in the last five years.

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1980	37.3	11.0	25.0
1981	43.7	11.5	28.5
1982	51.0	12.5	32.9
1983	59.2	17.0	39.4
1984	70.6	21.8	47.6

Fig. 5 Proportion of fish (by number) retained by active licensed anglers in the Northwest Territories in 1985.



and usually while on vacation, at the cottage, or on business (Table 7).

Nonresident licensed anglers made 12,065 trips to the Northwest Territories in 1985 and actually fished on 8,583 (71%) of these trips (Table 8). Respondants stated fishing was the main reason for 42% of their trips, a secondary reason for 19% of their trips and, for another 10%, an activity decided upon after their arrival. The remaining 29% of the trips did not include fishing. Ninety-seven percent of the fishing trips to the Northwest Territories lasted more than one day, the average length of these overnight trips was 10 nights. On these trips they stayed mostly in fishing lodges or camps (32% of the time).

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in the Northwest Territories in 1985. Natural beauty of surroundings, quality of water, access to wilderness areas and weather conditions were important components of the environmental factor. Other important factors were the size and number of fish caught, escape from daily routine, privacy from other fishing parties, and catching the desired species. Overall, anglers ascribed very

Table 7. Reasons N.W.T. resident anglers fished outside of the Northwest Territories in 1985.

Reasons	Number	%
Desired Species Not Available	132	7.7
On Vacation, Business, etc.	1,249	72.7
Other Reasons	338	19.6
Total	1,719	100.0

Table 8. Characteristics of nonresident anglers' trips to the Northwest Territories in 1985.

Characteristics	Number
Trips to the N.W.T. – All Reasons	12,065
Fishing Trips to the N.W.T.	8,583
– %	71
Fishing Trips – Main Reason for Visit	5,110
– Secondary Reason for Trip	2,321
– Decided Upon After Arrival (fishing not planned)	1,152
– Day Trips (one day only)	294
– Overnight Trips (more than one day)	8,289
Accommodation Used on Overnight Trips to the N.W.T.	% of Total Nights
Friends and Relatives	9.1
Tent or Trailer	19.0
Cottages	0.2
Camping in Provincial Parks	2.2
Camping on Crown Land	4.1
Camping in Commercial Camp Grounds	2.3
Fishing Lodge or Camps	32.1
Commercial Accommodation	6.8
Other Accommodation	24.2
Total (84,899 nights)	100.0

Table 9. Relative importance of factors affecting fishing enjoyment in the Northwest Territories in 1985.

Factors in Order of Importance	% of Responses Ranking Factors as Very Important		
	Resident	Nonresident	Total
	%	%	%
1. Environment*	47.2	40.9	44.7
2. Size and Number of Fish Caught	11.9	17.4	14.9
3. Escape from Routine	10.7	9.3	10.2
4. Privacy from other Fishing Parties	9.9	9.4	9.8
5. Catching the Species Desired	8.1	8.6	8.5
6. Angling for Wild Fish	7.4	8.7	8.2
7. Fish Caught as a Source of Food	4.7	2.6	3.7

*Environmental factors include i) natural beauty of surroundings, ii) quality of water, iii) access to wilderness areas, and, iv) weather conditions.

little importance to angling for wild (as opposed to hatchery) fish or for catching fish as a source of food (Table 9).

In 1985, 21% of resident anglers also hunted big game in the Northwest Territories. Twenty-six percent hunted small game, while 26% hunted wildlife birds (Table 10).

Table 10. Percentage of N.W.T. (licensed) resident anglers who indicated participation in wildlife related activities in 1985.

Activity	%
Hunting –	
1. Big Game	20.9
2. Small Game	26.1
3. Wildlife Birds	25.5
4. Nature Photography	55.0
5. Bird Watching	32.1
6. Feeding Wildlife	12.0

Approximately 55% of active nonresident anglers indicated they would not have come to the Northwest Territories in 1985 if no sport fishing opportunities were available (Table 11), 40% would have sub-

stituted other activities, and the remaining 6% would have stayed a shorter time.

Table 11. Intention of active non-resident anglers if fishing opportunities were not available in the N.W.T. in 1985.

Activity	No.	%
Stay Shorter Time	440	5.8
Substitute Other Activities	3,000	39.6
Not Come at All	4,140	54.6
No Opinion		
Total	7,580	100.0

In 1985, the majority of active nonresident anglers (85%) rated the quality of fishing in the Northwest Territories as good to excellent; 8% rated fishing as fair, and the remaining 7% rated the quality as poor or did not express an opinion. Overall, the angler ratings of fishing quality reported in this survey are very similar to the 1980 survey results. Although 17% fewer anglers rated the quality of fishing in the Territories as excellent in 1985, an additional 7.1% and 6.6% of nonresident an-

glers respectively indicated a rating of very good and good (Table 12).

Table 12. 1980-1985 comparison of active nonresident anglers' ratings on the quality of fishing in the N.W.T.

Rating	1980 % of Anglers	1985 % of Anglers
Excellent	57.7	38.9
Very Good	21.4	28.8
Good	10.6	17.2
Fair	5.1	8.3
Poor	3.4	5.5
No Opinion	1.8	1.3
Total	100.0	100.0

Approximately 88% of the non-resident active anglers indicated they would return to the Northwest Territories to fish in the future (Table 13).

Table 13. Active nonresident anglers' projected future fishing activity in the N.W.T.

	No.	%
Plan to return	6,658	87.8
Do not plan to return	764	10.1
No plans	158	2.1
Total	7,580	100.0

Expenditures and Investments

In 1985, anglers spent \$15.6 million in the Northwest Territories on supplies and services attributable to their sport fishing (Table 14). Residents spent a total of \$3.8 million, or an average of \$493 per active angler. Nonresidents spent \$11.7 million, or \$1,550 per active angler. Food, lodging and transportation accounted for 80% of the expenditures of resident anglers and 22% of the expenditures of nonresident anglers. (Figure 6). Packages, which included the costs of lodge facilities and outfitter organizations, accounted for 73% of the nonresident expenditures.

Anglers in the Northwest Territories invested \$11.4 million on major durables and property in 1985 (Table 15), of which \$4.6 million, or 40% was directly attributed to sport fishing activities (Figure 7). The average investment of active resident anglers was \$1,418 and the average investment of active nonresidents was \$52.

Table 14. Expenditures directly attributable to sport fishing in the Northwest Territories in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	1,063,148	945,605	2,008,753
Transportation	2,003,538	1,610,755	3,614,293
Fishing Services	143,608	375,330	518,938
Fishing Gear	250,890	234,921	485,811
Packages	363,228	8,576,193	8,939,421
Other	1,931	5,390	7,321
Total	3,826,343	11,748,194	15,574,537
Average Per Active Angler	492.51	1,549.89	1,014.69

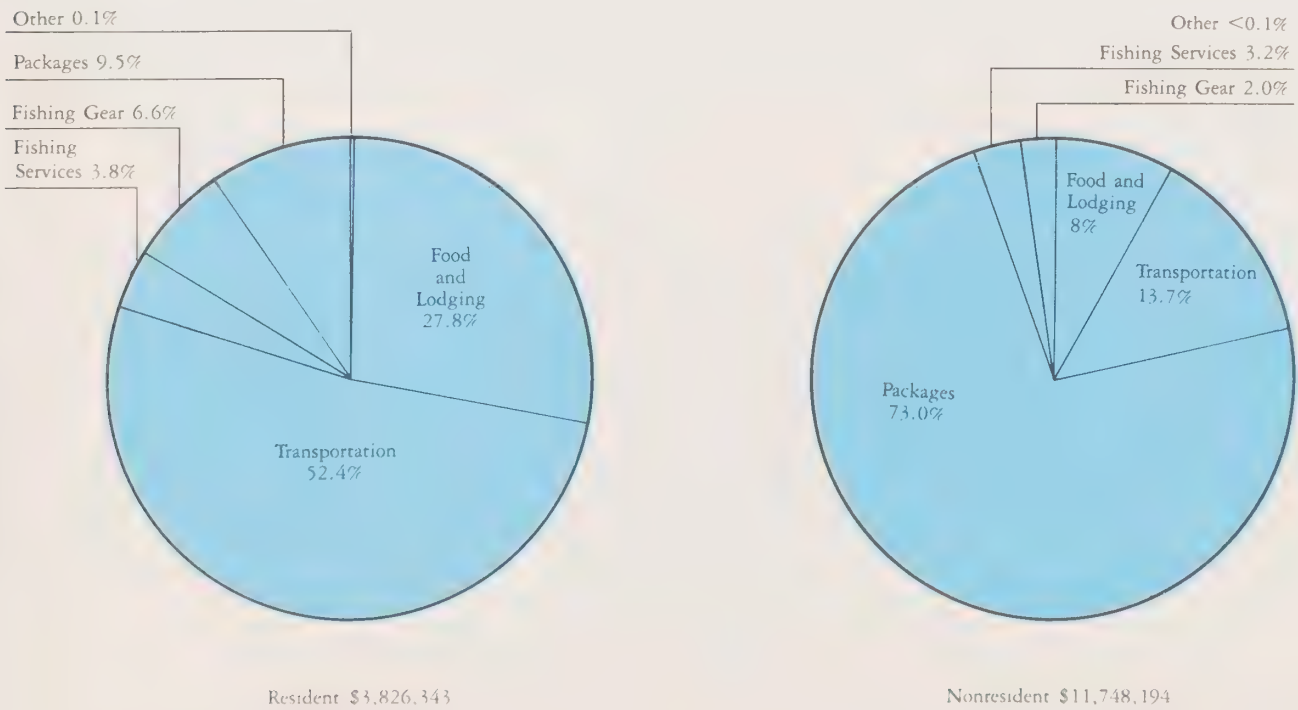
Ninety-seven percent of the investments were made by resident anglers. Northwest Territories residents and nonresidents, indicated that 39% and 81% respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of \$27 million on goods and services in 1985, of which \$20.2 million, or 75% was directly attributable to sport fishing in the Northwest Territories.

Willingness to Pay

Anglers receive a benefit, above and beyond what they actually spend, which is an important indicator of the economic value of the sport fishery. The survey sought to estimate this economic benefit by asking a question on willingness to pay. Active anglers were asked "if your fishing costs had been higher in the Northwest Territories in 1985 due to increased costs for gasoline,

Fig. 6. Proportion of expenditures attributable to sport fishing in the Northwest Territories in 1985.



accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?" Choices were given between \$1.00 and \$100.00 per day. Results were obtained from 69% of the active anglers surveyed. The average additional daily costs at which anglers would have stopped fishing was approximately \$36 for all anglers, for nonresidents slightly higher at \$40, and for residents of the Northwest Territories, slightly lower at \$33. However, these average costs do not properly reflect important differences among anglers. The most frequent responses for nonresident anglers were in the \$50 and \$100 per day ranges (Table 16), which is expected when considering the high cost of travel to the Northwest Territories and the fact that much of the nonresident activity takes place in a more remote and higher fishing quality, lodge-based setting. While resident anglers responses were clustered in the \$10 to \$30 per day ranges, there also were a significant

Table 15. Major purchases or investments relating in whole or in part to sport fishing in the Northwest Territories in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	386,464	83,160	469,624
Boats and Related Equipment	1,690,780	3,262	1,694,042
Camping Equipment	986,442	53,223	1,039,665
Special Vehicles (ATV's etc)	4,474,020	195,094	4,669,114
Land-Buildings	3,277,443	25,221	5,302,664
Other	198,903	37,068	235,971
Total Expenditures	11,014,052	397,028	11,411,080
Average Per Active Angler	1,417.69	52.38	743.44
Total Attributable to Sport Fishing	4,265,823	323.42	4,589,305
Average Per Active Angler	549.08	42.68	299.00

number of resident anglers who indicated their daily costs would have to increase by \$50 or more.

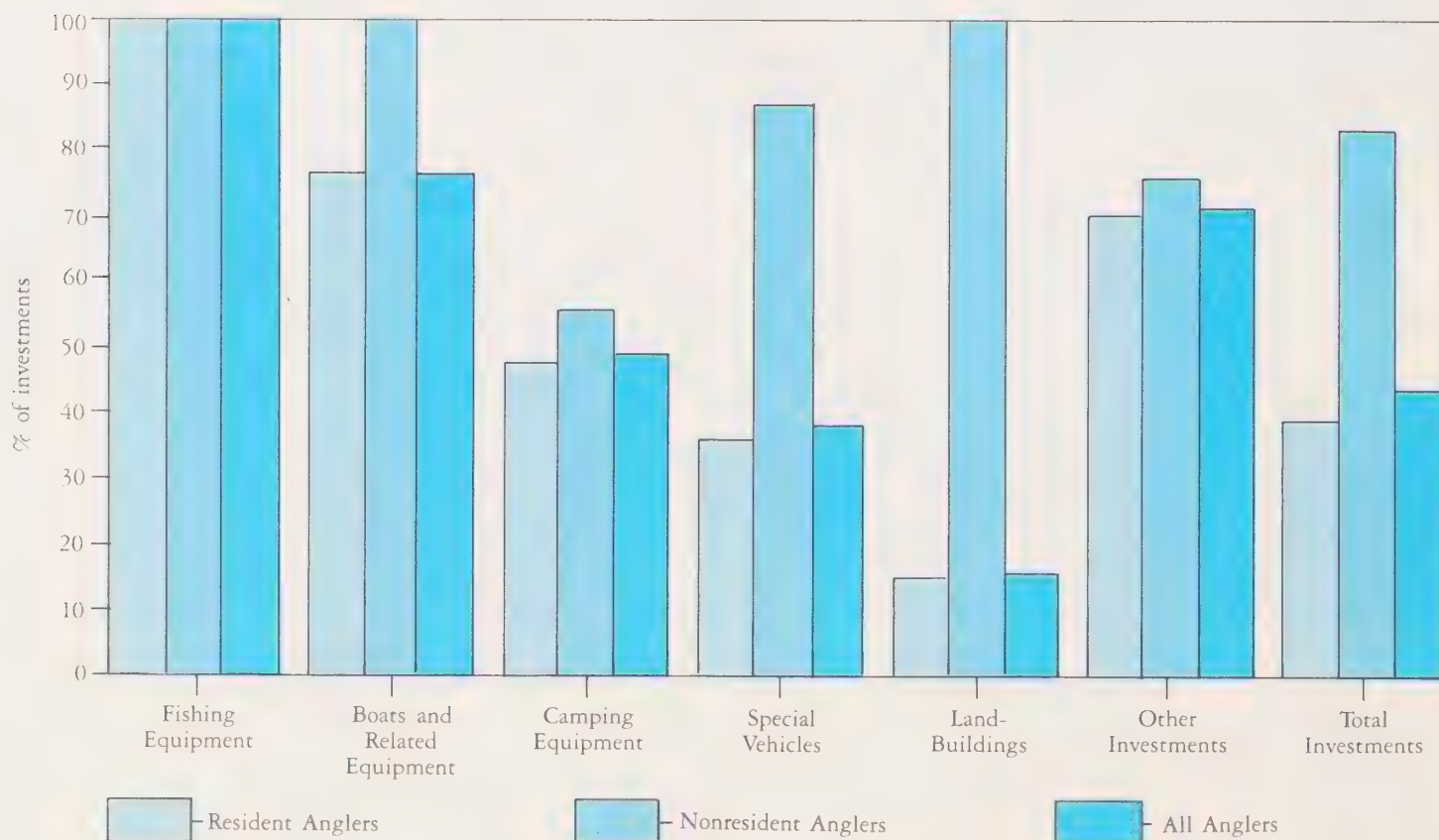
It must also be noted that while the survey suggests there are important benefits which accrue to anglers in terms of their willingness to pay for sport fishing, precise measure-

ment of these benefits will require further analysis.

Comparison with 1980 Results

Resident licence sales and the number of estimated active anglers increased from 1980, by 40% (Table 17). Nonresident licence sales

Fig. 7. Proportion of purchases or investments made by anglers in the Northwest Territories attributable to sport fishing in 1985.



decreased by 9% and the number of estimated active anglers dropped by 10%. Although the number of days fished by residents increased approximately 11%, nonresidents' fishing activity dropped 30% and the average numbers of total days fished by all anglers was down by 6%. The total harvest of all species combined was down 18% including a decline of 38% in the Arctic grayling harvest and a 40% decline in the Arctic charr harvest.

Direct expenditures by all licensed anglers were 59% higher in 1985 than in 1980. The major purchase and investment category totally attributable to sport fishing increased 185%, but some of this difference was likely due to different wording

of the question and a broader range of suggested categories in 1985.

Conclusions

The results of the 1985 survey confirm that sport fishing is an important component of the renewable resource economy of the Northwest Territories. This importance has been demonstrated for each of the resident and nonresident sport fisheries.

In 1985, the sport fishery provided recreation activity to 7,800 adult resident anglers who fished for 120,700 days. Based on population estimates for the Northwest Territories in 1985 of 33,400 individuals* 16 years of age and over, one N.W.T. resident in 4 sport fished in

1985. The survey has shown that resident anglers receive a non-priced benefit, above and beyond what they actually spend, which is an important indicator of the economic benefits they derive from the sport fishery. As noted above, precise measurement of these economic benefits will require more detailed analysis.

The survey has indicated continued growth in resident angling activity, with increases in the number of licensed anglers, the number of active anglers, and the number of days fished. This growth has resulted

* Statistics Canada — Postcensal Annual Estimates of Population, June 1985 — Volume 3.

Table 16. Willingness of active anglers to pay additional costs for fishing in the Northwest Territories in 1985.

Additional Cost Per Day	Resident	Nonresident	Total
	%	%	%
\$1.00	2.9	3.4	3.2
\$2.00	0.3	0.4	0.3
\$3.00	0.7	1.0	0.8
\$4.00	1.0	0.4	0.7
\$5.00	3.7	5.8	4.7
\$7.50	1.8	1.5	1.7
\$10.00	18.5	14.6	16.7
\$20.00	23.5	15.3	19.6
\$30.00	18.2	13.9	16.2
\$40.00	5.3	6.8	6.0
\$50.00	10.9	18.0	14.2
\$100.00	13.2	18.9	15.9
	100.0	100.0	100.0

Table 17. 1980-1985 comparisons of angler characteristics, days fished, species harvest and expenditures in the Northwest Territories.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	6,394	8,952	40%	8,730	7,955	-9%	15,124	16,907	12%
Total Active Adult Anglers	5,636	7,769	38%	8,409	7,580	-10%	14,045	15,349	9%
Total Days Fished ('000)	108.3	120.7	11%	75.0	52.2	-30%	183.3	172.9	-6%
Total Fish Caught and Retained ('000)	159.9	138.2	-14%	68.7	50.4	-27%	228.6	188.6	-18%
Total Direct Expenditures ('000)	\$1,564.9	\$3,826.3	145%	\$8,223.7	\$11,748.2	43%	\$9,788.6	\$15,574.5	59%
Major Purchases and Investments ('000)	\$2,901.6	\$11,014.1	280%	\$145.9	\$397.1	172%	\$3,047.5	\$11,411.1	274%
Total Attributable to Sport fishing ('000)	\$1,508.8	\$4,265.8	183%	\$108.6	\$323.5	198%	\$1,614.4	\$4,602.5	185%

in an increase in the direct value of the fishery to participants and in the economic impacts on those businesses providing goods and services to resident anglers.

The survey has also indicated the importance of the nonresident sport fishery. In 1985, the territorial sport fishery provided recreation activity to 7,600 adult nonresident anglers who fished for 52,200 days. The survey has shown that nonresidents also receive a non-priced benefit above and beyond what they actually spend, which may be greater than that for residents. While this benefit does not accrue to either the territorial or Canadian economy, it has important implications in planning for the

management of nonresident access to the sport fishery.

In the Northwest Territories, the nonresident fishery has long been a significant source of tourism, employment and income. In 1985, nonresident anglers made direct expenditures of \$11,748,194 and major purchases of \$397,028 which are attributable in whole or in part to sport fishing. The package plan sales of the lodge industry represented 73% of the total nonresident direct expenditures, indicative of the continuing role of the lodges in attracting tourists to the Northwest Territories. The economic impacts of nonresident anglers' expenditures generate significant employment and

income opportunity in the Northwest Territories.

The 1985 survey suggests there has been a decline in the number of nonresident anglers, and a significant reduction in nonresident fishing pressure and harvest. The current dollar comparison of 1980 and 1985 nonresident direct expenditures suggests a 43% increase in expenditure. However, because prices increased an identical amount for the same period, it seems the economic impacts from the nonresident fishery have, in fact, remained constant. The static nature of this sector should be of concern to the lodge industry and to territorial economic development agencies.

Cambridge Bay, N.W.T.



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"Sport Fishing in the Northwest Territories, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in the Northwest Territories, 1985"
Program Coordination and
Economics Branch
Department of Fisheries and Oceans
Central and Arctic Region
Freshwater Institute
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Program Coordination and
Economics Branch
Department of Fisheries and
Oceans
Central and Arctic Region
Winnipeg, Manitoba
R3T 2N6

SPORT FISHING IN NOVA SCOTIA, 1985

Introduction

In 1985, a survey of sport fishing in Nova Scotia was conducted to provide basic information on the importance of the recreational fishery to the public, anglers, the sport fishing industry and to fisheries management agencies. The survey was conducted by the Wildlife Division of the Nova Scotia Department of Lands and Forests in cooperation with the Surveys Unit, Economic and Commercial Analysis Directorate of the federal Department of Fisheries and Oceans, Ottawa.

The 1985 survey is the third in a series of studies that has been carried out at five-year intervals. The surveys are part of a nationally coordinated study conducted by all of Canada's provincial and territorial sport fisheries agencies and several regional offices of the Department of Fisheries and Oceans. The results of the 1985 survey for Nova Scotia are summarized in this bulletin.

Seventy-five percent (989) of the questionnaires sent to persons who had purchased angling licences in Nova Scotia in 1985 were completed and returned to provide the basis for the information given in this report. The report highlights the major findings.

The Resource Base

There are 38 species of fish which inhabit the fresh water of Nova Scotia as well as some 300 marine species. Of these, approximately one dozen of each group are of interest to anglers. The main freshwater species include four species of trout,

Atlantic salmon and smelt. White and yellow perch, bullheads and eels are widely distributed and regionally anglers may seek chain pickerel, smallmouth bass and tomcod. Marine species such as mackerel, cod, pollock, flounder and tuna are also available. Overall, brook trout is the most highly preferred and sought after species in Nova Scotia.

Nova Scotia's 55,000 square kilometers (21,400 square miles) includes about 6,700 lakes, 100 rivers, innumerable brooks and 7,442 kilometers (4,625 miles) of coastline. Most of the lakes and rivers are small and relatively infertile but the proximity of productive estuaries and marine habitat contribute to the production of some trophy-sized fish among anadromous species.

Most of the fresh water in Nova Scotia receives some angling pressure every year and overexploitation is a serious problem in the most accessible areas. There is little true wilderness fishing although some areas are still remote enough to provide a rewarding experience.

Angler Profile

There were 78,095 licensed anglers* in Nova Scotia in 1985, 97% (75,806) of whom were residents of the province (Table 1). Approximately 87% of residents and

* resident anglers under the age of 18 or over 64 do not require a general fishing licence.

Table 1. Numbers and characteristics of anglers in Nova Scotia in 1985.

	Resident	Nonresident		Total
		Canadian	Other	
Total Licensed Angling Population - Adults	75,806	1,030	1,259	78,095
Licensed Salmon Anglers	5,050	194	594	5,838
Active Adult Anglers				
- Males	57,662	910	1,155	59,727
(Average Age, Years)	38	42	48	38
- Females	8,243	61	85	8,389
(Average Age, Years)	38	42	42	38
Total	65,905	971	1,240	68,116
Resident Anglers Over 64 Years of Age	4,000	-	-	4,000
Children (under 18)*	29,649	243	170	30,062
Total Active Anglers* - All Ages	99,554	1,214	1,410	102,178

* Only includes households which had licensed anglers. The total number of anglers under the age of 18 was estimated at 112,000 in 1974.

97% of the 2,289 nonresidents fished. As well, 30,062 young people under the age of 18 living in licensed angler's households also fished, bringing the estimated population of active anglers in licensed households to 98,178. The number of anglers under the age of 18 is quite large, and their impact on the sport fishing of Nova Scotia is considerable. They are not covered in this survey.

Eighty-seven percent of the active resident adult anglers and 93% of the active nonresident adult anglers were male (Figure 1). The average age of all anglers was 38 years.

Approximately 45% of the non-resident anglers were Canadians, mainly from Ontario and New Brunswick. Almost all the remaining nonresidents were from the United States who came, for the most part, from the New England and Mid-Atlantic states (Table 2 and Figure 2).

Fishing Effort

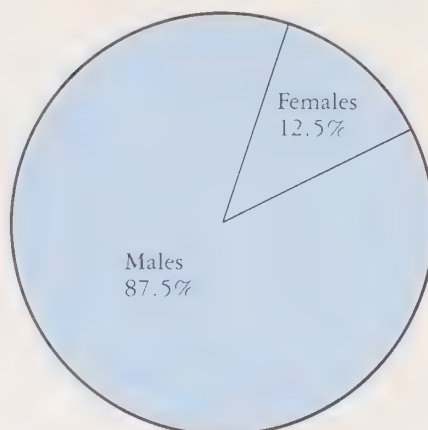
Angling was a major recreational activity in Nova Scotia in 1985. Licensed resident anglers fished an average of 18.2 days, while nonresidents spent an average of 6.5 days at their sport. Anglers who reported purchasing a salmon licence fished considerably more than average with residents fishing 32.7 days and nonresidents 7.2.

In 1985, licensed anglers devoted a total of 1.2 million days to sport fishing in Nova Scotia (Table 3). Of these, 184,000 were reported to have occurred in salt water. No estimate of effort could be made for anglers under 18 years of age or over 64.

Resident angler effort was highest in Halifax and Cape Breton counties (Table 3 and Figure 3). Nonresidents preferred Inverness County, where they expended 30% of their fishing effort. Overall, Halifax, Cape Breton and Guysborough counties were the most heavily fished. The balance of the angling effort was fairly equally distributed among the other 15 counties of the province.

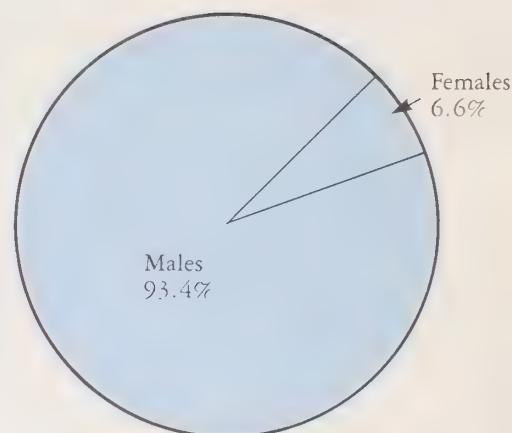
Fig. 1. Sex composition of active anglers.

A) Resident



65,905 active anglers.

B) Nonresident



2,211 active anglers.

Table 2. Origin of nonresident licensed anglers in Nova Scotia in 1985.

Province-State Group	No.	%
Canadian		
Newfoundland-Labrador	6	0.3
Prince Edward Island	86	3.8
New Brunswick	176	7.7
Quebec	88	3.8
Ontario	497	21.7
Manitoba	8	0.3
Saskatchewan	8	0.3
Alberta	98	4.3
British Columbia	47	2.1
Northwest Territories	16	0.7
Canadian Total	1,030	45.0
Non-Canadian		
New England, U.S.A.	522	22.8
Mid-Atlantic, U.S.A.	315	13.8
East North Central, U.S.A.	109	4.7
West North Central, U.S.A.	50	2.2
Mountain, U.S.A.	26	1.1
Pacific, U.S.A.	11	0.5
South Atlantic, U.S.A.	172	7.5
East South Central, U.S.A.	7	0.3
West South Central, U.S.A.	36	1.6
Europe	11	0.5
Non-Canadian Total	1,259	55.0
Grand Total	2,289	100.0

Sixty-four percent of resident anglers fished in only one county, while 25% fished in two counties and 11% in more than two. For nonresidents the comparable figures were 64%, 23% and 13%. Among an-

glers who reported purchasing a salmon licence, 46% fished in one county, 23% in two counties and 31% in more than two. This indicates that salmon anglers travel more for their fishing and this is verified

Fig. 2. Regional distribution of United States residents who held Nova Scotia angling licences in 1985.



Table 3. Angling effort (in angler-days) by county in Nova Scotia in 1985.

County Fished	Days Fished					
	Resident		Nonresident		Total	
	No.	%	No.	%	No.	%
1. Yarmouth	26,626	2.2	303	2.0	26,929	2.2
2. Digby	31,250	2.6	324	2.2	31,574	2.6
3. Annapolis	45,843	3.8	271	1.8	46,114	3.8
4. Kings	58,094	4.8	180	1.2	58,274	4.8
5. Hants	55,232	4.6	227	1.5	55,459	4.6
6. Cumberland	66,366	5.5	1,375	9.4	67,741	5.6
7. Colchester	48,586	4.1	1,192	8.4	49,778	4.1
8. Pictou	81,615	6.8	338	2.3	81,953	6.7
9. Antigonish	24,822	2.1	386	2.7	25,208	2.1
10. Inverness	49,087	4.1	4,319	29.8	53,406	4.4
11. Victoria	63,888	5.3	385	2.7	64,273	5.3
12. Cape Breton	156,587	13.0	859	5.9	157,446	12.9
13. Richmond	22,151	1.8	548	4.0	22,699	1.8
14. Guysborough	91,902	7.6	1,532	10.6	93,434	7.6
15. Halifax	260,873	21.8	1,383	9.8	262,256	21.7
16. Lunenburg	79,267	6.6	483	3.3	79,750	6.6
17. Queens	24,232	2.0	250	1.7	24,482	2.0
18. Shelburne	15,053	1.3	105	0.7	15,158	1.2
Total	1,201,474	100.0	14,460	100.0	1,215,934	100.0

by their reports on distances travelled. The average angler in Nova Scotia drove 342 miles for fishing purposes in 1985 while those who purchased a salmon licence averaged 862 miles.

In most counties, the majority of fishing effort by Nova Scotian anglers was expended by residents of those counties (Table 4). For example, in Cape Breton county 96.8% of the effort in that county was expended by residents of the county. By contrast, in Victoria county only 17.8% of the effort was by residents of that county.

Anglers were specifically asked if they fished in the Bras d'Or Lake in Cape Breton and responses revealed that 4,497 residents and 62 nonresidents fished there a total of 35,954 days. They also indicated that on average Nova Scotian anglers fishing in fresh water spent 47% of their

Fig. 3. Angling effort by county in Nova Scotia in 1985.

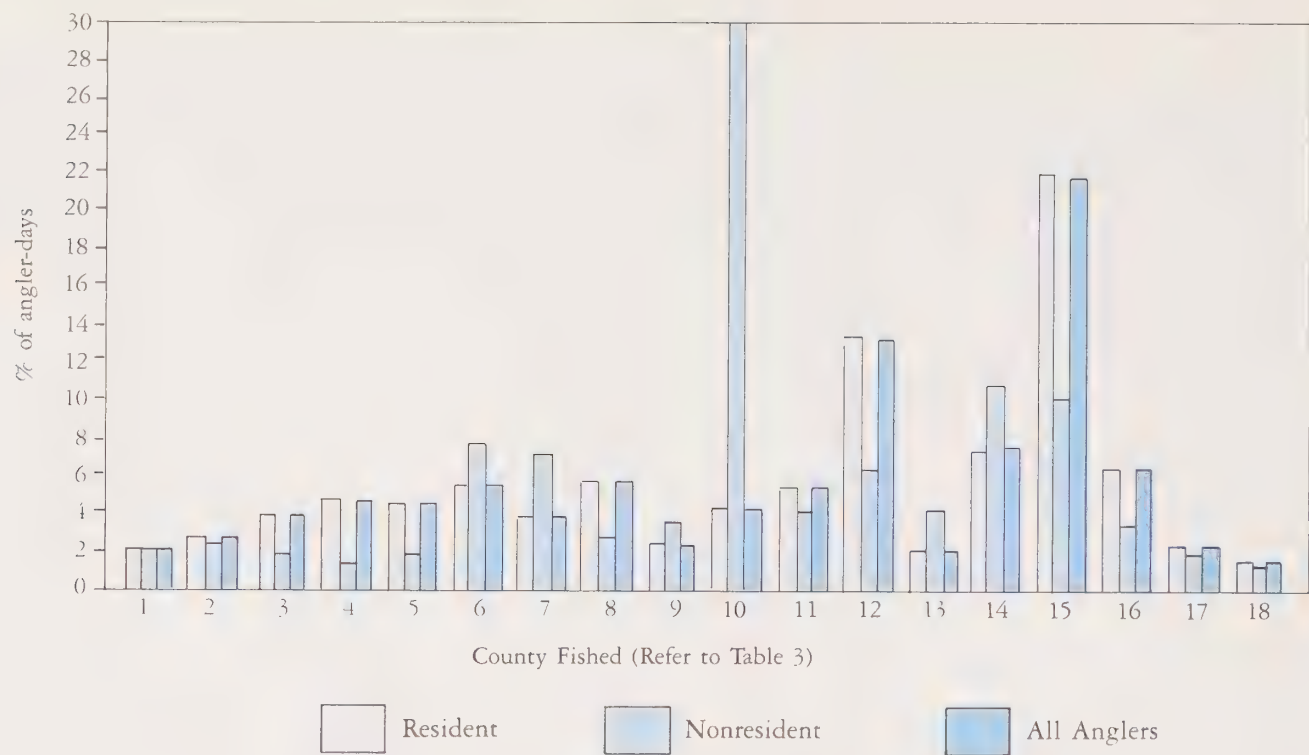


Table 4. Percent of fishing effort for each county by residents of the county and anglers from other counties.

County Fished	Effort by County Residents	Effort By Residents of Other Counties			
		1st	2nd	3rd	
	%	%	%	%	
Cape Breton	96.8	Halifax 1.8	Inverness 1.1	Kings	0.3
Shelburne	95.1	Halifax 4.1	Cape Breton 0.7	—	—
Kings	88.1	Hants 5.3	Lunenburg 3.5	Halifax	1.9
Halifax	85.4	Hants 7.9	Colchester 3.3	Pictou	2.4
Yarmouth	85.2	Digby 4.1	Kings 4.1	Halifax	3.7
Pictou	85.1	Halifax 9.6	Colchester 2.9	Hants	0.9
Hants	81.1	Halifax 12.9	Colchester 2.4	Cumberland	1.4
Digby	80.0	Yarmouth 8.1	Annapolis 7.7	Kings	4.6
Cumberland	77.8	Colchester 15.6	Halifax 2.9	Pictou	1.2
Lunenburg	69.4	Halifax 16.7	Hants 5.7	Kings	4.7
Colchester	69.4	Cumberland 12.7	Halifax 9.4	Hants	6.5
Queens	65.7	Lunenburg 23.0	Kings 6.3	Halifax	2.7
Annapolis	59.8	Kings 21.2	Halifax 7.9	Queens	4.8
Inverness	55.4	Cape Breton 31.2	Halifax 9.3	Victoria	1.6
Antigonish	40.5	Pictou 44.9	Cape Breton 5.7	Halifax	4.0
Richmond	32.7	Cape Breton 56.9	Inverness 6.4	Colchester	1.5
Guysborough	28.2	Pictou 36.8	Halifax 13.2	Antigonish	12.6
Victoria	17.8	Cape Breton 77.1	Halifax 2.7	Colchester	1.2

time in lakes and 53% of their time in rivers and streams. Predictably, resident salmon anglers fished in rivers and streams 71% of the time while nonresident salmon anglers spent 98% of their time there.

Bait was the most popular gear type for resident anglers while non-residents preferred fly fishing (Table 5). As might be expected, both resident and nonresident salmon anglers spent most of their time fly fishing.

In 1985, licensed anglers caught an estimated 5.6 million fish of all species and retained 4.6 million, for a total of 2.3 million pounds or 1.0

Table 5. Percentage of time using gear types in Nova Scotia in 1985.

Licence Type	Salmon Licence	% of Time			
		Lure	Bait	Lure & Bait	Fly
Resident	Yes	4.9	12.7	12.3	70.1
	No	10.0	48.6	28.5	12.9
	Total	9.6	46.0	27.3	17.1
Nonresident Canadian	Yes	0.3	0.6	0.9	98.2
	No	12.1	37.0	23.6	27.3
	Total	9.7	29.7	19.1	41.5
Nonresident Other	Yes	3.1	0.7	1.5	94.7
	No	25.6	3.6	8.5	38.6
	Total	15.0	13.9	5.1	65.1
TOTAL		9.7	45.2	26.8	18.3

million kilograms (Tables 6 and 7). Smelt, brook trout and mackerel were the species most frequently taken, with smelt and brook trout alone accounting for 77% of the harvest by number (Figure 4). Resident anglers caught 99% of all fish. Of the 67 fish retained, on average, 27 were smelt, 25 were brook trout and 5 were mackerel. Table 8 breaks down resident angler effort and catch by species. Brook trout were fished by 81% of resident anglers while only 2.8% fished for white perch. The catch per day ranged from 31 for smelt to 0.1 for Atlantic salmon.

Table 6. Numbers of fish caught by species by licensed anglers in Nova Scotia in 1985.

Fish Species	Resident	Nonresident	Total
Brook Trout	2,267,211	28,484	2,295,695
Rainbow Trout	274,724	2,159	276,883
Brown Trout	63,901	1,162	65,063
Atlantic Salmon	23,114	1,208	24,322
Smallmouth Bass	78,843	2,192	81,035
Yellow Perch	163,018	1,246	164,264
White Perch	30,019	739	30,758
Chain Pickerel	1,201	—	1,201
Smelt	1,858,225	1,213	1,859,438
Mackerel	323,022	4,538	327,560
Striped Bass*	18,606	22	18,628
Cod	131,819	1,097	132,916
Flounder	52,710	498	53,208
Pollock	82,386	1,650	84,036
Other Species	171,530	243	171,773
Total Number Caught	5,540,329	46,451	5,586,780

* Some confusion likely with White Perch.

Table 7. Numbers of fish retained by species by licensed anglers in Nova Scotia in 1985.

Fish Species	Resident	Nonresident	Total
Brook Trout	1,695,971	15,904	1,711,875
Rainbow Trout	227,477	1,288	228,765
Brown Trout	48,836	392	49,228
Atlantic Salmon	9,017	410	9,427
Smallmouth Bass	17,975	32	18,007
Yellow Perch	55,022	210	55,232
White Perch	10,813	723	11,536
Chain Pickerel	1,092	—	1,092
Smelt	1,844,463	1,205	1,845,668
Mackerel	321,106	4,368	325,474
Striped Bass*	8,772	—	8,772
Cod	117,509	872	118,381
Flounder	51,588	411	51,999
Pollock	23,074	220	23,294
Other Species	134,148	112	134,260
Total Number Retained	4,566,863	26,147	4,593,010
Weight of Fish Retained (in lbs)	2,258,777	20,367	2,279,144

* Some confusion likely with White Perch.

Fig. 4. Proportion of fish (by number) retained by active licensed anglers in Nova Scotia in 1985.

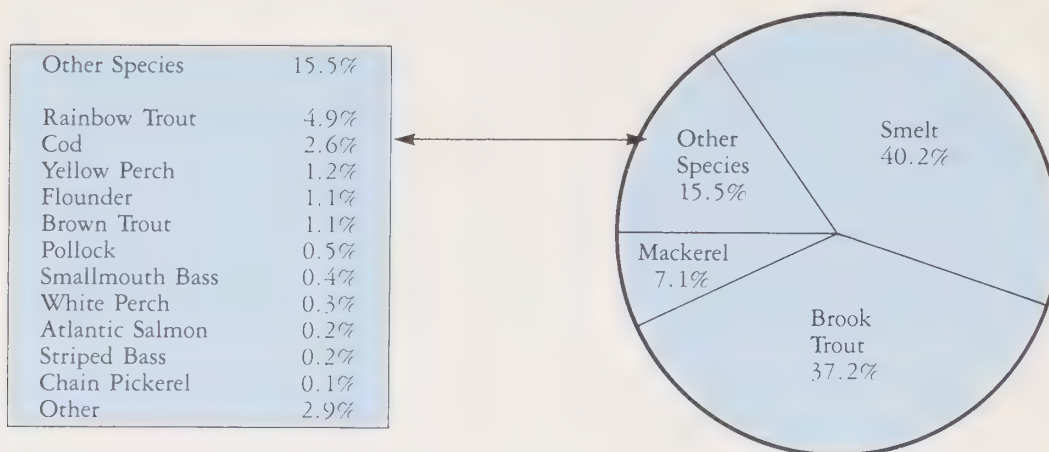


Table 8. Number of active resident anglers who reported fishing for each species, number of days fished by species and catch by species in Nova Scotia in 1985.

Species	No. of Anglers	% of Anglers	Number of Days	Days/Angler	Catch*/Day	Catch*/Angler
Brook Trout	53,418	81.1	671,081	12.6	2.5	31.7
Rainbow Trout	20,068	30.5	188,574	9.4	1.2	11.3
Brown Trout	8,359	12.7	87,957	10.5	0.6	5.8
Atlantic Salmon	4,433	6.7	78,257	17.6	0.1	2.0
Smallmouth Bass	3,668	5.6	21,037	5.7	0.9	4.9
Yellow Perch	3,688	5.6	28,950	7.8	1.9	14.9
White Perch	1,828	2.8	9,048	4.9	1.2	5.9
Smelt	8,378	12.7	57,233	6.8	31.0	220.2
Mackerel	9,315	14.1	52,863	5.7	6.1	34.5
Striped Bass**	3,511	5.3	21,094	6.0	0.4	2.5
Cod	4,886	7.4	28,599	5.9	4.1	25.8
Flounder	2,999	4.6	17,289	5.8	3.0	17.2
Pollock	3,499	5.3	19,340	5.5	1.2	6.6
Others	5,088	7.7	65,072	12.8	2.1	26.4

* Caught and retained

** Some confusion likely with White Perch.

Table 9. Angler preference by species in Nova Scotia in 1985.

Preference Order	Resident	Preference Rating	Nonresident	Preference Rating
1	Brook Trout	49.5	Brook Trout	39.9
2	Rainbow Trout	14.1	Atlantic Salmon	30.1
3	Atlantic Salmon	10.4	Rainbow Trout	9.4
4	Brown Trout	6.1	Brown Trout	7.8
5	Mackerel	6.0	Smallmouth Bass	4.0
6	Smelt	4.0	Mackerel	2.3
7	Smallmouth Bass	3.2	Striped Bass	1.5
8	Striped Bass	1.8	Flounder	1.5
9	Cod	1.4	Cod	1.2
10	Perch	1.1	Perch	0.6
11	All Others	2.4	All others	1.7

Brook trout was the preferred species for both resident and non-resident anglers in Nova Scotia in 1985 (Table 9). Rainbow trout was voted second spot by residents with Atlantic salmon third. This order was reversed among nonresidents. The salmonid family won 80% of the votes by residents and 87% for nonresidents.

Most resident anglers who held Nova Scotia fishing licences in 1985 had also fished in the province

in 1981 (Table 10), however, only 35% of nonresident anglers had done so. Two-thirds of the residents and one quarter of the nonresidents had been fishing in Nova Scotia at the time of the previous survey 5 years ago.

Table 10. Fishing activity in Nova Scotia in the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1980	67.8	23.9	66.5
1981	69.9	23.9	68.5
1982	73.9	28.3	72.6
1983	78.9	33.2	77.6
1984	80.7	34.7	79.4

For 20% of nonresident anglers, Nova Scotia was the only place they fished in 1985. Fewer than 4,000 resident anglers (5% of licensed

adult anglers) fished outside Nova Scotia in 1985, generally while on vacation. Of these, 44% fished in Newfoundland, 24% in New Brunswick and 16% in Ontario. Only 11% fished outside Canada.

Nonresident anglers made 8,188 trips to Nova Scotia in 1985, or about 3.6 trips per angler (Table 11). Fishing activity occurred on 40% of all trips anglers made to the province. For 90% of the trips on which they fished, fishing was either the main or secondary reason for visiting the province. Seventy-nine percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 13 nights). On these trips they stayed mostly with friends and relatives (41% of the time) or at cottages (17% of the time).

Residents and nonresidents alike listed water quality as the single most important factor that contributed to their enjoyment of a day of sport fishing in Nova Scotia (Table 12 and Figure 5). Second on their

list was the natural beauty of the province. For resident anglers, the opportunity to fish for wild (as opposed to hatchery) fish was the third most important factor, while nonresidents considered access to wilderness areas as being very important. Other important factors were the chance to escape from the workday routine, favourable weather conditions, success in catching the desired species, the size of the fish caught and privacy from other fishing parties. Anglers ascribed little importance to catching fish for food and to the number of fish caught. Salmon anglers only varied slightly from the rankings assigned by the average angler.

Respondents were requested to choose one of four management options if fish populations were declining in particular areas due to overfishing (Table 13). Residents favored shorter seasons and size limits while nonresidents liked "catch and release" and lower bag limits. Anglers who purchased salmon licences wanted "catch and release" and size limits. For residents most of the "other" category requested stocking for a total of 6.5% of respondents.

In 1985, 59% of resident anglers also hunted in the province. Twenty percent were involved in nature photography, 19% in bird watching and 31% in feeding wildlife. All told, 79% of resident anglers were involved in wildlife related activities besides fishing in 1985. Approximately 11% of Nova Scotia anglers were members of a national or provincial wildlife organization or local fish and game club. Salmon anglers reported a participation rate of about 40%.

In 1985, anglers spent \$15.2 million in Nova Scotia on activities and supplies connected with their sport (Table 14). Average expenditures per angler were \$216 for residents and \$423 for nonresidents. Resident salmon anglers reported an average expenditure of \$468. Most of this money, 87% of it, was spent

Table 11. Trip characteristics of nonresident anglers in Nova Scotia in 1985.

Characteristics	Number
Trips to Nova Scotia – All Reasons	8,188
Fishing Trips to Nova Scotia	3,292
	40
Days Spent For All Reasons	41,940
Days Fished	14,460
	34
Fishing Trips – Main Reason for Visit	1,508
– Secondary Reason	1,445
– Decided Upon After Arrival	252
Day Trips for Fishing	685
Overnight Trips for Fishing	2,607
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	41.3
Tent or Trailer	13.4
Cottages	17.4
Camping in Provincial Parks	2.5
Camping on Crown Land	1.1
Camping in Commercial Camp Grounds	4.7
Fishing Lodge or Camps	3.7
Commercial Accommodation	13.1
Other Accommodation	2.8

Table 12. Relative importance of factors affecting fishing enjoyment in Nova Scotia in 1985.

Factors	Ranking Score		
	Resident	Nonresident	Salmon Anglers*
1. Quality of Water	13.7	14.4	15.2
2. Beauty of Surroundings	12.8	13.8	13.0
3. Angling Wild (not hatchery) Fish	11.3	9.8	11.5
4. Access to Wilderness Areas	10.7	11.2	11.6
5. Escape from Work or Routine	10.1	10.4	10.9
6. Privacy from other Fishing Parties	9.8	10.5	9.3
7. Weather Conditions	8.9	6.8	6.9
8. Catching Species Desired	8.4	9.5	10.4
9. Size of Fish Caught	7.2	6.3	6.1
10. Number of Fish Caught	4.7	5.6	3.8
11. Catch as a Source of Food	2.4	1.7	1.3

* Anglers who purchased a resident or nonresident salmon fishing licence.

Fig. 5. Importance of factors affecting fishing enjoyment in Nova Scotia in 1985.

Factor numbers (refer to Table 12)

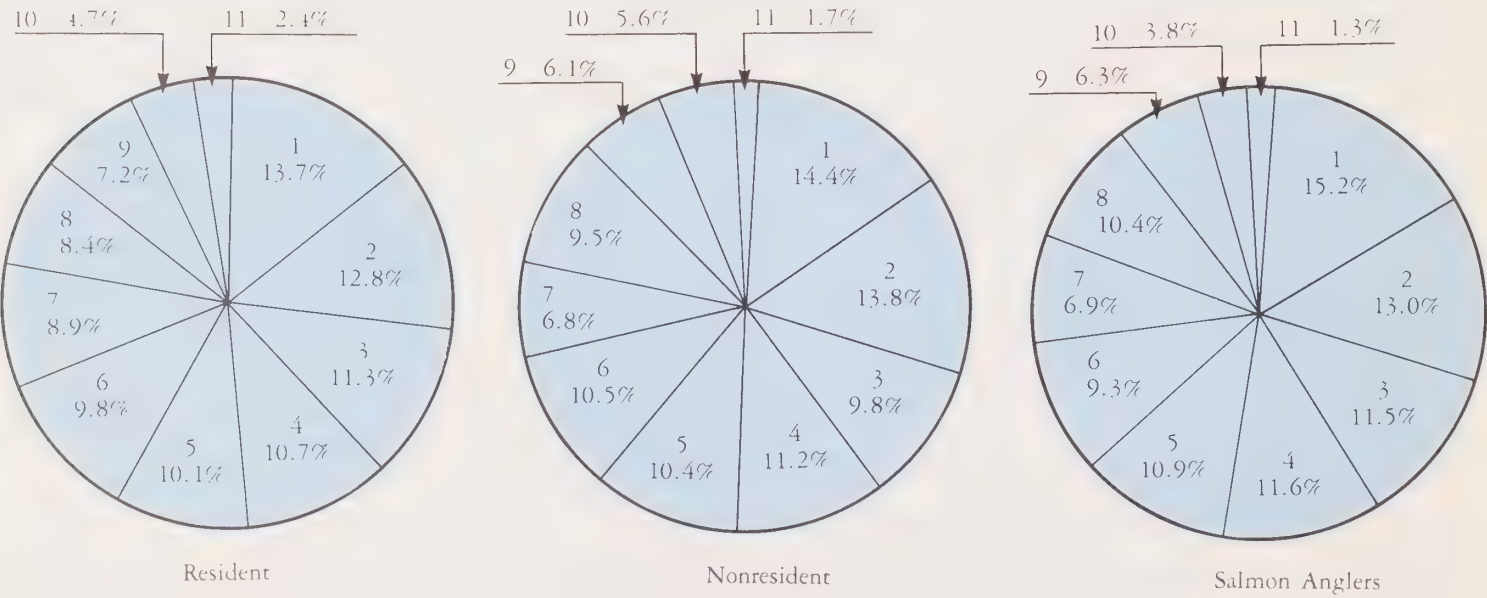


Table 13. Management options chosen by anglers when faced with problem of over fishing in Nova Scotia in 1985.

Options	% of Responses		
	Resident	Nonresident	Salmon Anglers
Shorter Season	27.2	7.8	14.5
Size Limit	28.4	16.0	21.5
Lower Bag Limit	18.1	25.5	19.0
Catch and Release	15.5	38.4	24.0
Other	10.8	12.3	20.9

Table 14. Expenditures directly attributable to sport fishing in Nova Scotia in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	5,627,962	501,693	6,129,655
Transportation	6,622,171	194,125	6,816,296
Fishing Services	501,239	94,213	595,452
Fishing Gear	1,317,345	39,536	1,356,881
Packages	157,571	96,171	253,742
Other	37,776	9,162	46,938
Total	14,264,064	934,900	15,198,964
Average Per Active Angler	216.43	423.01	223.13

on food, lodging and transportation (Figure 6).

Nova Scotia anglers invested \$48.8 million on major purchases and property, of which \$19.2 million (39%) was attributed by anglers to their sport fishing activities (Table 15). Special vehicles (ATV's, snowmobiles, camper trucks, etc.) were the most popular items, accounting for almost half (46%) of the investments. Resident anglers were responsible for 99.8% of the investments.

Fig. 6. Proportion of expenditures attributable to sport fishing in Nova Scotia in 1985.

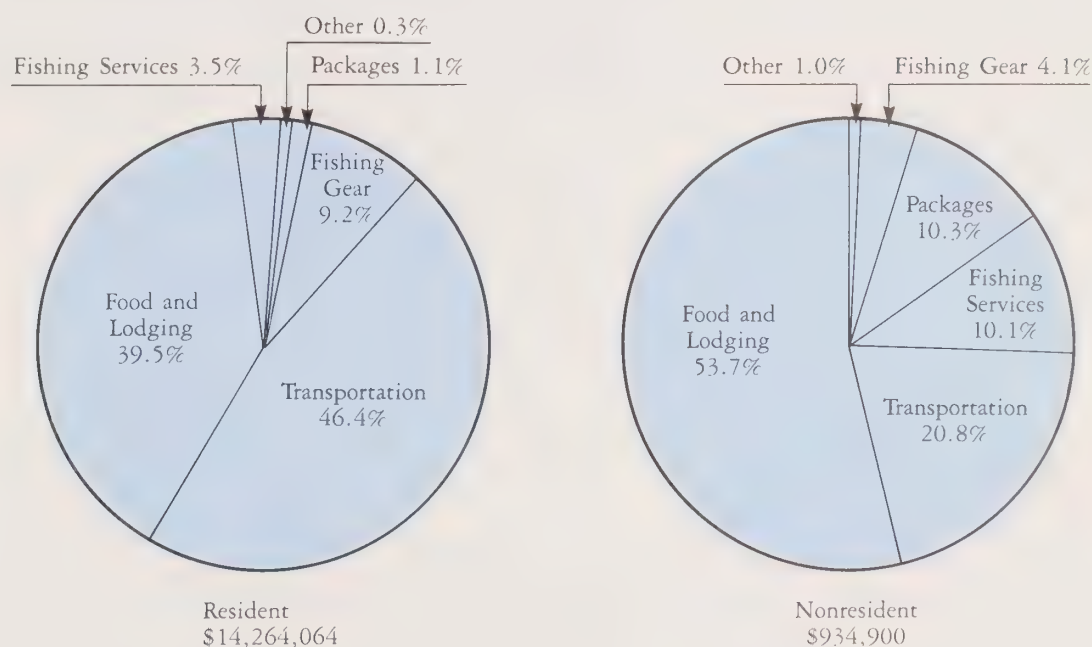


Table 15. Major purchases or investment relating in whole or in part to sport fishing in Nova Scotia in 1985.

Expenditures	Resident		Nonresident		Total	
	\$	%*	\$	%*	\$	%*
Fishing Equipment	2,000,246	100.0	28,402	100.0	2,028,648	100.0
Boats and Related Equipment	6,276,900	63.0	2,502	100.0	6,279,402	63.0
Camping Equipment	4,853,485	46.0	1,910	73.0	4,855,395	46.0
Special Vehicles (ATV's etc)	22,274,511	27.0	—	—	22,274,511	27.0
Land-Buildings	12,310,640	34.0	43,024	32.0	12,353,664	34.0
Other	955,430	85.0	12,416	92.0	967,846	85.0
Total	48,671,212	39.0	88,254	65.0	48,759,466	40.0
Average Per Licence Holder	642.05	39.0	38.56	65.0	624.36	40.0
Total Attributable to Sport fishing	19,184,363	100.0	57,439	100.0	19,241,802	100.0

* Percentage wholly attributable to sport fishing.

Overall, Nova Scotia anglers spent a total of \$64 million on goods and services in 1985, of which \$34 million (54%) was considered directly attributable to sport fishing.

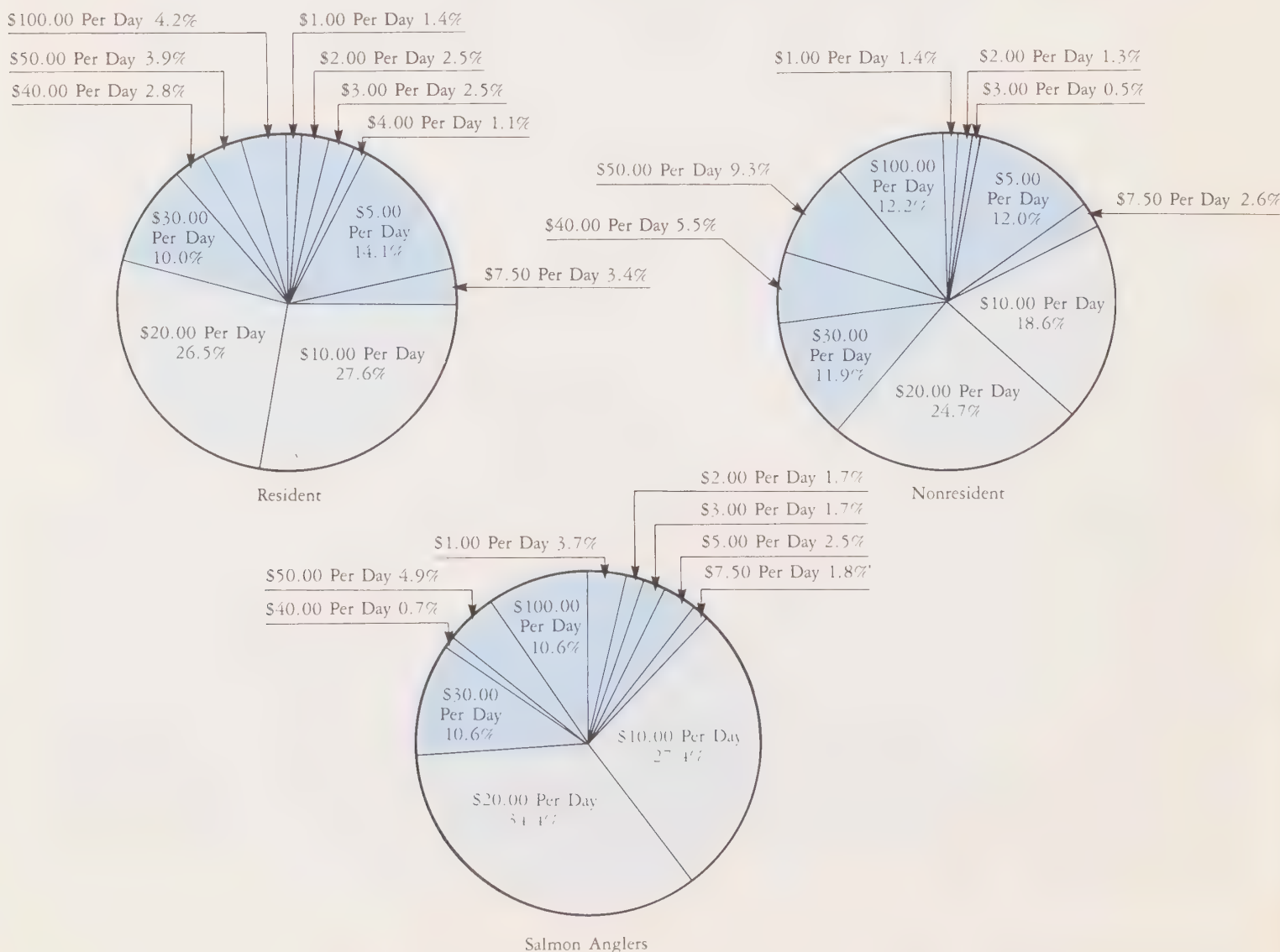
Additionally, anglers estimated the current market value of the sport fishing gear and equipment used by their households solely for sport fishing at \$83 million. This included \$29 million for boating equipment, \$24 million for camping equipment and \$14.5 million for fishing equipment.

Active anglers were asked "if your fishing costs had been higher in Nova Scotia in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have

Table 16. Willingness of active anglers to pay additional costs for fishing in Nova Scotia in 1985.

Additional cost per day	Resident	Non-resident	Total	Lic. Salmon Holders
	%	%	%	%
\$1.00	1.4	1.4	1.4	3.7
\$2.00	2.5	1.3	2.5	1.7
\$3.00	2.5	0.5	2.5	1.7
\$4.00	1.1	—	1.0	—
\$5.00	14.1	12.0	14.0	2.5
\$7.50	3.4	2.6	3.3	1.8
\$10.00	27.6	18.6	27.4	27.4
\$20.00	26.5	24.7	26.5	34.4
\$30.00	10.0	11.9	10.0	10.6
\$40.00	2.8	5.5	2.9	0.7
\$50.00	3.9	9.3	4.1	4.9
\$100.00	4.2	12.2	4.4	10.6
	100.0	100.0	100.0	100.0

Fig. 7. Additional daily \$ amount at which anglers would have decided not to go sport fishing in Nova Scotia in 1985.



decided not to fish?" Choices were given between \$1.00 and \$100.00 per day and the results are shown in Table 16 and Figure 7. Twenty-three percent of the anglers chose not to answer the question, but of those who did, \$10 and \$20 per day were the most common answers in all categories. The average daily amount given by residents was \$19.48, by nonresidents \$30.27 and by all salmon anglers \$26.46.

Table 16. Daily amount anglers are willing to pay for a day of fishing.

Resident licence sales decreased by 6% as compared to 1980, although the number of active anglers remained virtually unchanged. (Table 17). Nonresident licence sales increased by 4% as did active anglers. Total days fished by all licensed anglers was down 19% with angler days spent on the principal species, brook trout, down by 31%. The total catch of all species combined was down 15%. Brook trout showed a decrease of 15% and smelt 27%.

Direct expenditures by all licensed anglers was 25% higher than in 1980. The major purchase or investment category totally attributable to sport fishing was up 146% but some of this difference was likely due to different wording of the question with a broader range of suggested categories in 1985.

Expenditures

The results of the 1985 survey of sport fishing in Nova Scotia confirm that angling is an important socio-economic component of the natural resource sector in the province. It is estimated that anglers spent \$15.2 million on activities directly associated with fishing. These were monies spent on accommodation, food, travel, lures, licences, etc. Additionally, anglers invested \$48.8 million on major durables and property in 1985, of which \$19.2 million was wholly attributable to sport fishing. This amounts to a total of \$34.4 million which anglers spent

directly on angling in Nova Scotia in 1985. Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending such as described above. As the money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact of sport fishing within the Nova Scotia economy was \$52 million or greater in 1985. Anglers also indicated they were prepared to spend an average of about \$20 per day above their current costs in 1985 before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Licensed anglers fished 19% fewer days in 1985 than they had in 1980, although the number of active anglers remained nearly the same. There has also been a 31% decrease

Table 17. 1980-1985 comparisons of angler characteristics/species harvest and expenditures in Nova Scotia.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	80,429	75,806	- 5.7%	2,200	2,289	4.0%	82,629	78,095	- 5.5%
Total Active Adult Anglers	66,906	65,905	- 1.5%	2,134	2,211	3.6%	69,040	68,116	- 1.3%
Total Days fished('000)	1,487.9	1,201.5	- 19.2%	15.4	14.5	- 5.9%	1,503.2	1,215.9	- 19.1%
Total Species Caught and Retained ('000)	5,388.1	4,566.9	- 15.2%	37.9	26.1	- 31.1%	5,426.1	4,593.0	- 15.4%
Total Direct Expenditures ('000)	\$11,620.9	\$14,264.1	22.7%	\$585.2	\$934.9	59.8%	\$12,206.1	\$15,199.0	24.5%
Major Purchases and Investments ('000)	\$14,085.6	\$48,671.2	245.5%	\$174.3	\$88.3	- 49.3%	\$14,259.9	\$48,759.5	241.9%
Total Attributable to Sport fishing ('000)	\$7,698.5	\$19,184.4	149.2%	\$99.8	\$57.4	- 42.5%	\$7,798.3	\$19,241.8	146.7%

in the time they spent angling the preferred species, brook trout. This may well reflect decreasing availability of brook trout. Such a decrease is substantiated by other indicators.

Nova Scotian anglers indicated that they were more concerned about the fishing experience than they were about catching fish. They rated water quality and natural beauty as the two most important factors while size and number of fish caught were rated number nine and ten re-

spectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a quality recreational experience.

Fifty-nine percent of resident Nova Scotian anglers also hunted in 1985 and 79% reported that they were involved in wildlife related activities besides fishing in 1985. Obviously, many of the users of fish and wildlife resources take advantage of both components.

In summary, the average Nova

Scotian angler in 1985 was 38 years old, strongly preferred to fish for brook trout and felt that water quality and natural beauty were the most important factors influencing a day's fishing. Bait was used most often with fishing activity in fresh water fairly equally divided between lakes and streams. This average angler fished on 18 days, while spending \$500 and catching 82 fish. Sixty-seven of these fish weighing a total of 15 kilograms (33 pounds) were kept.



Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Wildlife Division
Department of Lands and
Forests
Kentville, Nova Scotia
B4N 3X3

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"Sport Fishing in Nova Scotia, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Nova Scotia, 1985"
Department of Lands and Forests
P.O. Box 516
Kentville, N.S.
B4N 3X3

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SPORT FISHING IN PRINCE EDWARD ISLAND, 1985

Introduction

Details about sport fishing in Prince Edward Island in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the Fish and Wildlife Division of the Department of Community and Cultural Affairs in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series of studies carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sport Fishing in Prince Edward Island" and subsequently the second was reported in the "1980 Survey of Sport Fishing in Prince Edward Island". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial sport fisheries

agencies. Thus not only does this report provide basic information on the Prince Edward Island sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socio-economic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally co-ordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Fifty-two percent (691) of the questionnaires sent to persons who



had purchased angling licences in Prince Edward Island in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

The resource base of the province's sport fishery consists of its inland fresh waters, its saltwater ocean shoreline and estuaries, and its offshore ocean water. Virtually all of the ponds, rivers and streams on the island contain native populations of brook (speckled) trout, the most sought-after and esteemed sport fish in the province. Rainbow trout, first introduced in 1925, are found in many islands, rivers, streams and ponds.

There are 1,100 kilometres of open saltwater shoreline in the province, 35% of which rank among the finest recreational areas in the Maritime region. The estuarial fishery, which included the brackish portions of rivers, ocean shoreline and wharves extending into salt water, offers brook trout, mackerel and, during the winter months, smelt. The island's offshore ocean supports a thriving charter boat industry that offers the excitement of deep-sea fishing for cod, halibut, hake and mackerel, as well as for the highly prized giant bluefin tuna.

Angling Activity

There were 13,729 licensed adult anglers in Prince Edward Island in 1985, 90% (12,388) of whom were residents of the province (Table 1). About 85% of the residents and 98% of the 1,341 nonresidents were active anglers having fished in 1985. As well 5,721 children under the

Table 1. Numbers and characteristics of anglers in Prince Edward Island in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a)				
– Adults	12,388	962	379	13,729
Active Adult Anglers				
– Males	8,822	884	345	10,051
(Average Age, Years)	37	44	48	38
– Females	1,766	55	27	1,848
(Average Age, Years)	38	42	55	38
Total	10,588	939	372	11,899
Children (b)	4,507	869	345	5,721
Total Active Anglers				
– All Ages	15,095	1,808	717	17,620

- (a) Individuals who purchased an angling licence in P.E.I. This group provides the basis for the statistical information in this bulletin.
- (b) Individuals under 16 years of age. (Based on an independent study conducted in 1973, it is estimated that an additional 6,500 children under 16 years of age fished in P.E.I. in 1985, but they are not included in this survey, and are therefore, not represented in the statistical information presented in this bulletin).
- (c) Canadians who live in provinces/territories other than P.E.I. and who fished in P.E.I. in 1985.

age of 16 living in licensed anglers' households also fished, bringing the total population of active anglers in the province to 17,620. It is known that the number of resident children fishing in P.E.I. is considerably under-estimated. A study of school-aged children conducted in 1973 found that more than 11,000 children under 16 years of age were active anglers. The most recent population figures, for children under 16, show that there has been little change in this population since the early 1970's. Assuming that the activity rates have remained constant, it is estimated 6,500 resident children would have fished in P.E.I. in 1985 in addition to the 4,507 living in anglers' households identified in this survey. This would increase the total 1985 angling population in the province to approximately

24,000 active anglers. Eighty-three percent of the active resident adult anglers and 94% of the nonresidents were male (Figure 1). The average age of all anglers was 38 years. Approximately 72% of the nonresident anglers were Canadians, mainly from Ontario, New Brunswick and Nova Scotia. The remaining nonresident anglers were United States citizens who came, for the most part, from the New England states (Table 2 – Figure 2).

Angling Activity

Angling in Prince Edward Island is a major recreational activity. Anglers fished a total of 289,718 days in 1985 (Table 3). On the average, each angler spent 24.3 days fishing in 1985. Resident anglers

Fig. 1. Sex composition of active anglers.

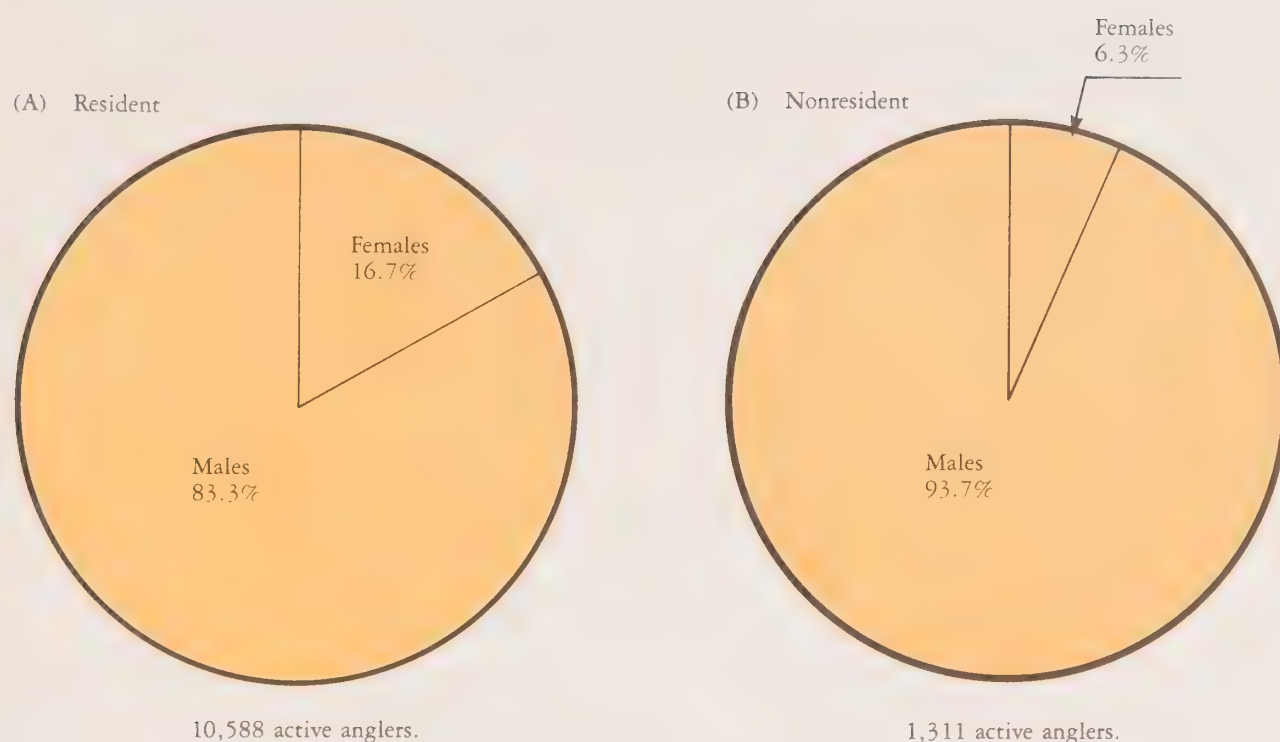


Table 2. Origin of nonresident licensed anglers in Prince Edward Island in 1985.

Province-State Group	Number
Canadian	
Newfoundland-Labrador	11
Nova Scotia	186
New Brunswick	192
Quebec	76
Ontario	291
Manitoba	17
Alberta	11
British Columbia	11
Other Provinces	167
Canadian Total	962
Non-Canadian	
New England, U.S.A.	205
Mid-Atlantic, U.S.A.	59
South Atlantic, U.S.A.	29
East South Central, U.S.A.	14
West South Central, U.S.A.	7
U.S.A. - Other States	65
Non-Canadian Total	379
Grand Total	1,341

fished an average of 26.5 days, while nonresidents spent an average of 6.8 days at their sport.

Most fishing (94%) occurred during the period April through September. During that time 94% of resident, 99% of nonresident Canadian, and 100% of other non-resident fishing effort was expended. Approximately 52% of all effort occurred during April, May and June. As might be expected, nonresidents were most active during the summer months, July through August, expending 70% of their fishing effort during that time.

Prince Edward Island was divided into six fishing areas. The saltwater and freshwater fisheries of the Charlottetown region were heavily fished by resident anglers where they spent 26% of their time (Figure 3). The

Fig. 2. Regional distribution of United States residents who held Prince Edward Island angling licences in 1985.



remaining time was fairly equally distributed among the other five regions. Nonresidents favoured freshwater fishing in the North Lake Souris region and saltwater fishing in the Cavendish region.

In 1985, anglers caught an estimated 1,106,532 fish of all species and retained 753,645 of them (Table 4). These fish weighed approximately 390,760 pounds or

177,215 kilograms. Resident anglers caught 96% of the fish harvested (by number). Brook trout, smelt and sea trout, were the most widely taken species, comprising 77% of the harvest (by number) with brook trout

Table 3. Angling effort *(in angler-days) by season in Prince Edward Island in 1985.

Season	Resident	Nonresident	Total
January – March	8,499	28	8,527
April – June	147,419	2,503	149,922
July – September	117,530	6,393	123,923
October – December	7,318	28	7,346
Total	280,766	8,952	289,718

* Number of days anglers fished.

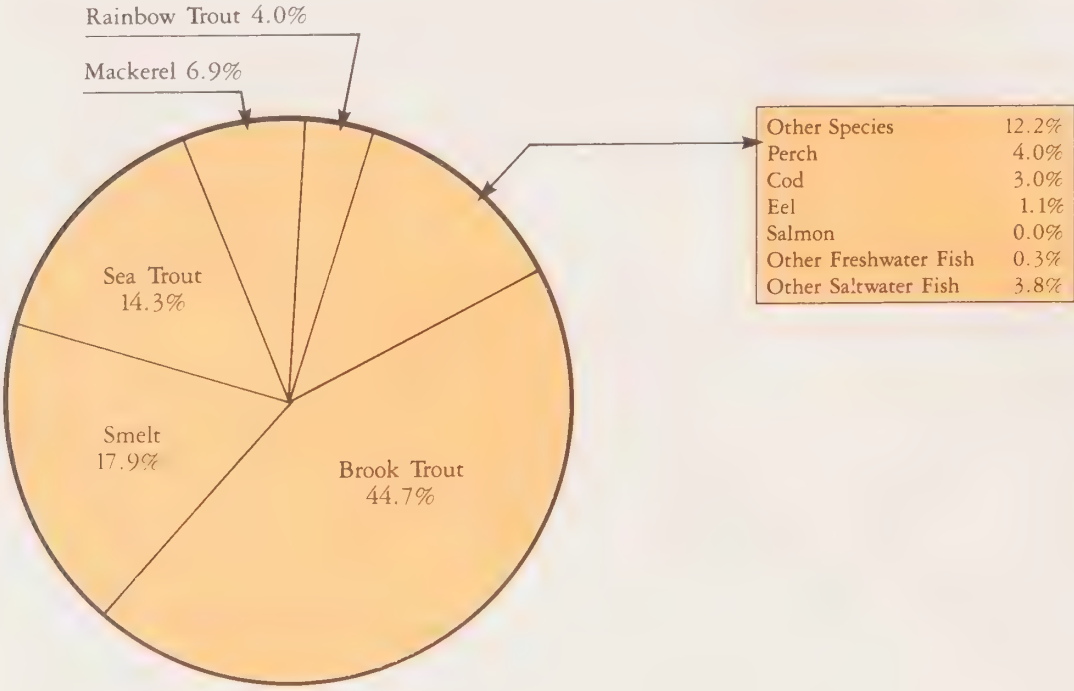
Fig. 3. Percentage of angler-days expended by anglers in each fishing area of Prince Edward Island in 1985.



Table 4. Numbers of fish caught and retained by species in Prince Edward Island in 1985.

Fish Species	Resident	Nonresident	Total
Brook Trout	318,659	18,403	337,062
Smelt	132,177	2,478	134,655
Sea Trout	105,506	1,898	107,404
Mackerel	50,764	1,216	51,980
Rainbow Trout	29,481	861	30,342
Perch	29,280	570	29,850
Cod	20,773	2,097	22,870
Eel	8,226	81	8,307
Salmon	47	20	67
Other Freshwater Fish	2,040	142	2,182
Other Saltwater Fish	28,580	346	28,926
Total Number Retained	725,533	28,112	753,645
Weight of Fish Retained (in lbs)	364,921	25,839	390,760

Fig. 4 Proportion of fish (by number) retained by active licensed anglers in Prince Edward Island in 1985.



alone accounting for 45% of the harvest (Figure 4). Of the 63 fish retained, on average, 28 were brook trout, 11 were smelt, 9 were sea trout and 15 were other species. Brook trout, sea trout and rainbow trout were the species most sought after by resident and nonresident anglers (Table 5).

Eighty-two percent of the Prince Edward Island residents and

42% of the nonresidents who held P.E.I. sport fishing licences in 1985 had also fished in the province in 1984 (Table 6). In addition, 70% of the resident and 31% of the nonresident anglers fished in P.E.I. at the time of the previous survey 5 years ago. Approximately 20% of the nonresident anglers indicated Prince Edward Island was the only place they fished in 1985. Only 755 resident anglers (6% of licensed adult anglers) fished outside the province in

Table 6. Fishing activity in P.E.I. during the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	Total
	%	%	%
1980	70.2	31.5	66.4
1981	69.7	32.9	66.1
1982	72.6	35.0	68.9
1983	80.6	36.6	76.3
1984	82.2	42.4	78.3

Table 5. Distribution of species preference indicated by anglers in Prince Edward Island in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Brook Trout	29.9	33.4	30.3
Sea Trout	22.4	16.6	21.8
Rainbow Trout	14.4	15.9	14.5
Other Trout	10.0	8.6	9.8
Mackerel	7.5	5.2	7.2
Smelt	6.0	1.7	5.5
Salmon	4.6	11.5	5.4
Cod	2.9	4.3	3.1
Other species	2.3	2.8	2.4
Total	100.0	100.0	100.0

1985, chiefly in Nova Scotia and New Brunswick and usually while on vacation, at the cottage or on business (Table 7).

Table 7. Reasons given by residents of Prince Edward Island for fishing outside the province in 1985.

Reasons	Number	%
Species Not Available	163	21.6
On Vacation, Business, etc.	374	49.5
Other Reasons	218	28.9
Total	755	100.0

Nonresident anglers made 3,234 trips to Prince Edward Island in 1985, or about 2 trips per angler of which 57% were for fishing (Table 8). For 62% of their fishing trips, fishing was a secondary reason for visiting the province and for 24% of these trips, fishing was the main reason. Almost all of their fishing trips (99%) lasted more than a day (the average length of an overnight fishing trip was 10 nights). Approximately 38% of the time they stayed with friends and relatives, 23% of the time they used commercial accommodation and 21% of the time they stayed at their cottages.

Residents and nonresidents alike listed quality of water as the single most important factor that contrib-

Table 8. Trip characteristics of nonresident anglers in Prince Edward Island in 1985.

Characteristics	Number
Trips to Prince Edward Island – All Reasons	3,234
Fishing Trips to Prince Edward Island	1,851
– %	57
Days Spent For All Reasons	24,026
Days Fished	8,952
– %	37
Fishing Trips – Main Reason for Visit	451
– Secondary Reason	1,143
– Decided Upon After Arrival	257
Day Trips for Fishing	17
Overnight Trips for Fishing	1,834
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	37.8
Tent or Trailer	7.0
Cottages	21.0
Camping in Provincial Parks	2.5
Camping on Crown Land	1.0
Camping in Commercial Camp Grounds	3.5
Fishing Lodge or Camps	—
Commercial Accommodation	22.9
Other Accommodation	4.3
Total Nights Spent on Fishing Trips	18,663

uted to their enjoyment of a day of sport fishing in Prince Edward Island. The second and third most important factors were the natural beauty of the province and privacy from other fishing parties. Also of importance were angling for wild (as opposed to hatchery) fish, access

to wilderness areas, favourable weather conditions, the chance to escape from work or household routine and catching the desired species. Anglers ascribed little importance to the number and size of fish caught or to the catch as a source of food (Table 9).

Table 9. Relative importance of factors affecting fishing enjoyment in Prince Edward Island in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Quality of Water	14.0	14.4	14.0
2. Beauty of Surroundings	12.4	13.7	12.5
3. Privacy	10.2	9.6	10.1
4. Angling for Wild Fish	9.9	10.6	10.0
5. Access to Wilderness	9.6	10.3	9.7
6. Weather Conditions	10.0	7.8	9.7
7. Escape Routine	9.5	10.1	9.6
8. Catch Species Desired	8.7	9.1	8.7
9. Size of Fish Caught	7.5	6.1	7.4
10. Number of Fish Caught	6.0	5.9	6.0
11. Catch as a Source of Food	2.2	2.4	2.3

Prince Edward Island residents also enjoyed many wildlife related activities in the province in 1985 (Table 10). Hunting was of particular interest to most resident anglers, as 26% were actively involved in hunting for wild birds, 18% hunted small game and another 4% enjoyed hunting for big game outside the province. Feeding wildlife, bird watching and nature photography were another favourite pastime for 31%, 20% and 14% of these anglers respectively. Approximately 12% of licensed adult resident anglers were members of a national or provincial wildlife organization or local fish and game club; 509 resident anglers indicated membership in the P.E.I. Wildlife Federation, 231 indicated membership in the Canadian Wildlife Federation, and 686 indicated membership in a private club or association (Table 11).

Approximately 92% of active nonresident anglers indicated they would return to Prince Edward Island to fish in the future (Table 12). If there had been no fishing opportunities in P.E.I. in 1985, seventy-two percent of nonresident active anglers indicated they would have substituted other activities, 15% would have stayed a shorter time and 12% would not have come to the province at all (Table 13). Overall, 50% of active nonresident anglers rated the quality of fishing in P.E.I. as good to excellent; 27% rated fishing as fair, 21% rated the quality as poor and the remaining 2% did not answer the question or had no opinion (Table 14).

Table 10. Wildlife related activities of Prince Edward Island residents in 1985.

Activity	%
Hunting – 1. Big Game	4.1
2. Small Game	18.1
3. Wildlife Birds	25.8
4. Nature Photography	14.0
5. Bird Watching	20.4
6. Feeding Wildlife	31.0

In 1985, anglers spent \$2 million in Prince Edward Island on activities and supplies directly connected with their sport (Table 15). Residents spent a total of \$1.6 million or an average of \$152 per active angler. Nonresidents spent \$422,787 or an average of \$322 per active angler. Food, lodging and transportation accounted for 80% of the expenditures of resident anglers and

88% of the expenditures of nonresident anglers (Figure 5).

Anglers in Prince Edward Island invested \$3 million on major durables and property in 1985 (Table 16), of which \$1.7 million, or 57% was attributed to sport fishing activities (Figure 6). Almost half of the \$3 million was spent on special vehicles (ATV's, snowmobiles, camper trucks, etc.). The average investment of active resident anglers was \$279 and the average investment of active

Table 11. Membership organization of Prince Edward Island residents in 1985.

Organization	No.	%
P.E.I. Wildlife Fed.	509	4.1
Canadian Wildlife Fed.	231	1.9
Private Club or Assoc.	686	5.5

Table 12. Projected future participation of active nonresident anglers in Prince Edward Island.

Return	No.	%
Yes	1,205	91.9
No	62	4.7
No Opinion	44	3.4
Total	1,311	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in Prince Edward Island in 1985.

Activity	No.	%
Stay Shorter Time	193	14.7
Substitute Other Activities	942	71.9
Not Come at All	152	11.6
No Opinion	24	1.8
Total	1,311	100.0

Table 14. Attitude of active nonresident anglers on quality of fishing in Prince Edward Island in 1985.

Rating	No.	%
Excellent	166	12.6
Very Good	195	14.9
Good	297	22.7
Fair	355	27.1
Poor	270	20.6
No Opinion	28	2.1
Total	1,311	100.0

Table 15. Expenditures directly attributable to sport fishing in Prince Edward Island in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	389,748	283,911	673,659
Transportation	891,561	86,737	978,298
Fishing Services	73,617	22,237	95,854
Fishing Gear	235,566	15,301	250,867
Packages	11,917	11,196	23,113
Other	6,320	3,405	9,725
Total	1,608,729	422,787	2,031,516
Average Per Active Angler	151.94	322.49	170.73

Fig. 5. Proportion of expenditures attributable to sport fishing in Prince Edward Island in 1985.

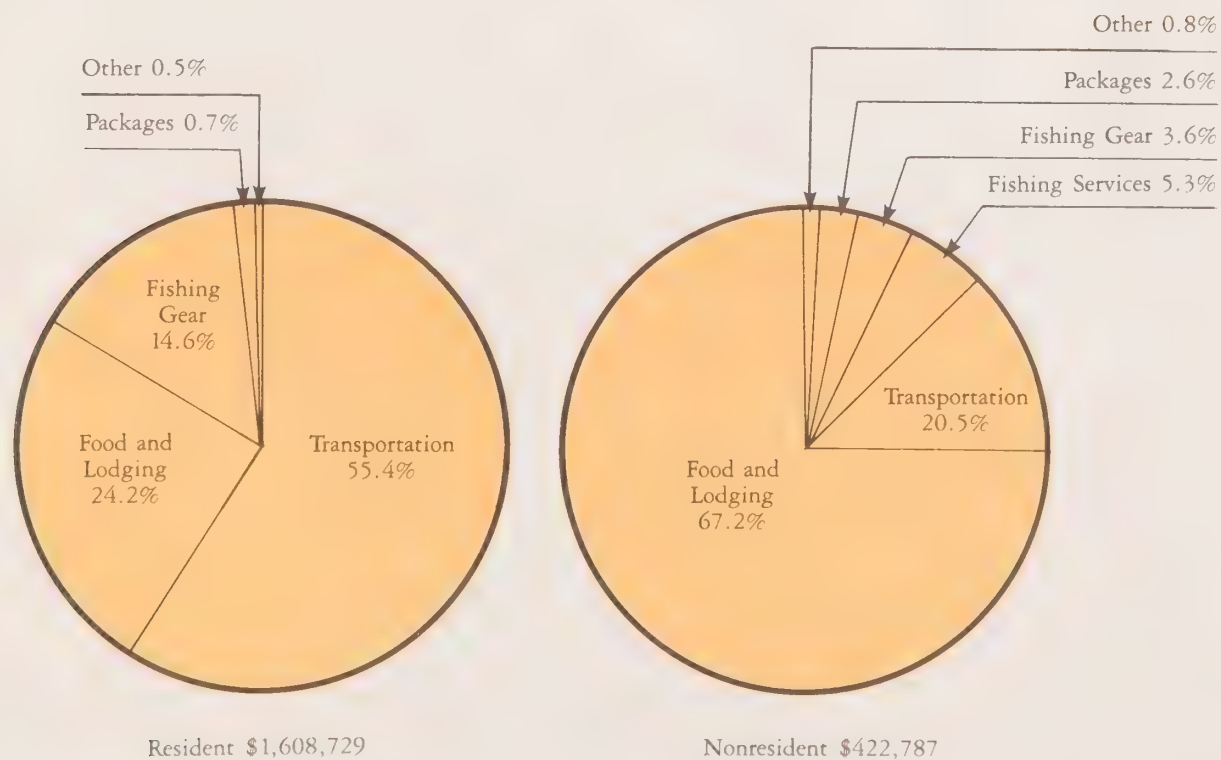


Table 16. Major purchases or investments relating in whole or in part to sport fishing in Prince Edward Island in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	297,137	10,068	307,205
Boats and Related Equipment	471,553	5,752	477,305
Camping Equipment	305,226	9,482	314,708
Special Vehicles (ATV's etc)	1,350,194	—	1,350,194
Land-Buildings	407,917	6,907	414,824
Other	122,168	2,404	124,572
Total	2,954,195	34,613	2,988,808
Average Per Active Angler	279.01	26.40	251.18
Total Attributable to Sport fishing	1,662,608	31,234	1,693,842
Average Per Active Angler	157.03	23.82	142.35

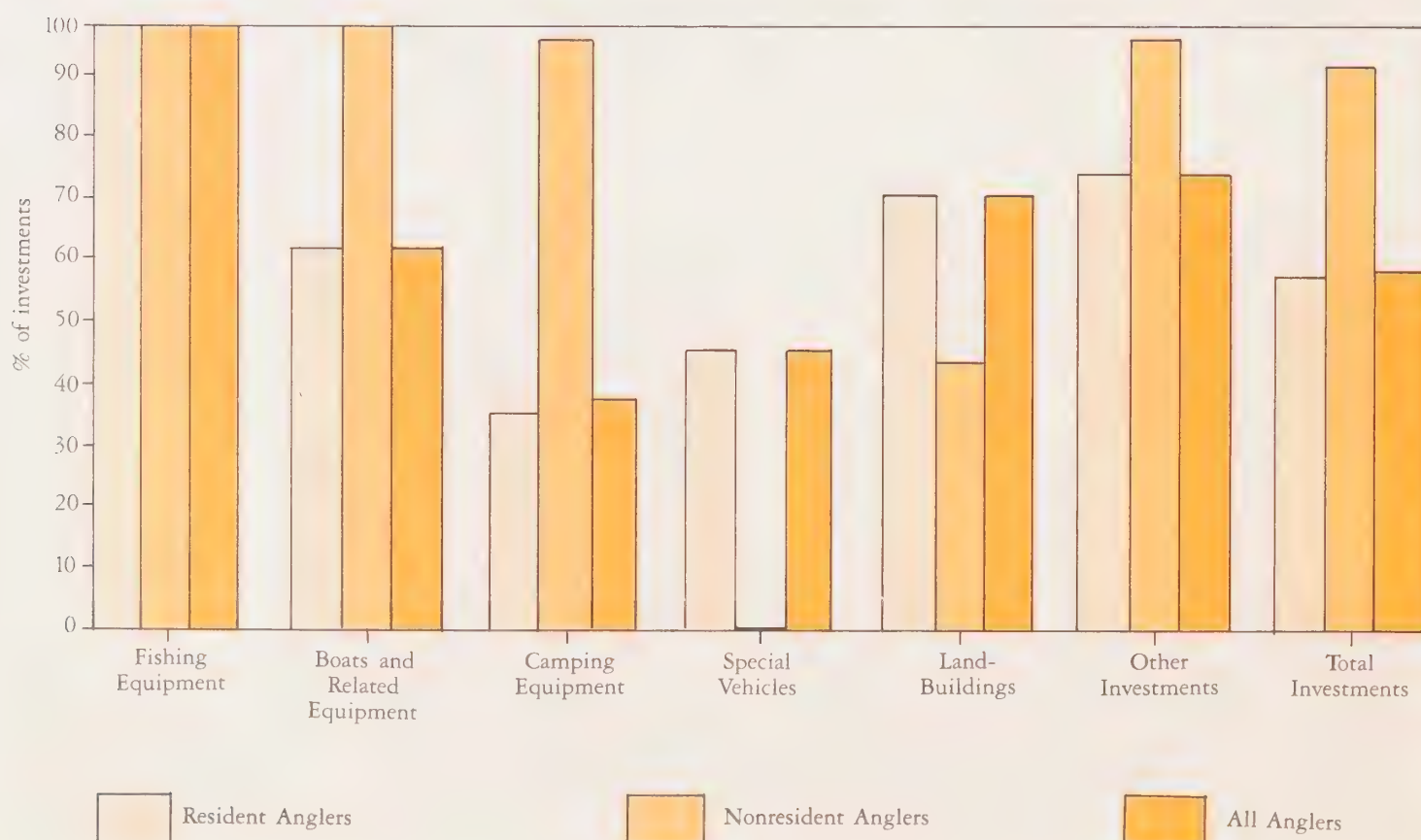
nonresidents was \$26. Ninety-nine percent of the investments were made by resident anglers. P.E.I. residents and nonresidents indicated

that 56% and 90% respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of

\$5 million on goods and services in 1985, of which \$3.7 million or 74% was directly attributable to sport fishing in Prince Edward Island.

Fig. 6. Proportion of purchases or investments made by anglers in Prince Edward Island attributable to sport fishing in 1985.



Active anglers were asked "if your fishing costs had been higher in Prince Edward Island in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?". Choices were given between \$1.00 and \$100.00 per day and the results are shown in Table 17. Twenty-seven percent indicated they were not willing to pay any additional costs, 71% would have stopped fishing when their additional daily costs reached \$10, 87% would have stopped fishing when their additional daily costs reached \$20, 94% when they reached \$30, 95% when they reached \$40, 97% when they reached \$50, and all anglers would have stopped fishing when their daily additional costs reached \$100. When extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in Prince Edward Island in 1985 was

approximately \$3.9 million in excess of the \$5 million they already spent.

The results of the 1985 survey of sport fishing in Prince Edward Island confirm that it is an important socio-economic component of the natural resource sector in the province. It is estimated that anglers spent \$2 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$2.9 million on major durables and property, of which \$1.7 million was used for sport fishing. In all, anglers invested a total of \$5 million in 1985, of which \$3.7 million was directly attributed to sport fishing in Prince Edward Island.

Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated

businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact of sport fishing within Prince Edward Island was \$5.6 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$3.9 million in total above their current costs in 1985 before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 13,729 adults purchased a Prince Edward Island sport fishing licence in 1985 and of these 11,899 actively participated in the sport. More than 10,500 of the active adult anglers were residents of the province. Based on the population estimate of 94,700* individuals 16 years of age and over, one resident in nine fished in 1985. Anglers fished a total

* Statistics Canada - Postcensal Annual Estimates of Population, June 1985 - Volume 3.

Table 17. Willingness of active anglers to pay additional costs for fishing in Prince Edward Island in 1985.

Additional Cost Per Day	Resident	Nonresident	Total
	%	%	%
\$0.00	27.0	29.4	27.2
\$1.00	29.6	30.7	29.6
\$2.00	32.4	33.3	32.3
\$3.00	35.1	35.2	34.9
\$4.00	37.1	36.1	36.5
\$5.00	49.3	42.5	48.4
\$7.50	53.3	43.6	52.1
\$10.00	72.7	59.5	71.1
\$20.00	88.6	75.2	87.0
\$30.00	95.4	88.0	94.5
\$40.00	95.9	91.7	95.4
\$50.00	97.4	96.4	97.3
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$3,812.5	\$121.7	\$3,934.2

of 289,718 days in 1985, and they harvested 753,645 fish of all species. These fish weighed 390,760 pounds or 177,215 kilograms.

Prince Edward Island anglers indicated that they were more concerned about the fishing experience than they were about catching fish. They rated water quality and natural beauty of the province, as the two

most important factors, while size and number of fish were rated nine and ten, respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average Prince Edward Island angler in 1985 was

38 years old, strongly preferred to fish for brook trout and felt that water quality and natural beauty of surroundings were the most important factors influencing a day's fishing. This average angler fished on 24 days, while spending \$313 and catching 93 fish. Sixty-three of these fish, weighing a total of 33 pounds (15 kilograms) were kept.



Photo by: George Wotton

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Fish and Wildlife Division
Department of Community
and Cultural Affairs
Charlottetown, P.E.I.
C1A 7N8

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"Sport Fishing in Prince Edward Island, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Prince Edward Island, 1985"
Fish and Wildlife Division
Department of Community and
Cultural Affairs
3 Queen Street, Box 2,000
Charlottetown, P.E.I.
C1A 7N8

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SPORT FISHING IN QUÉBEC IN 1985

Introduction

In 1985, a survey of sport fishing in Québec was carried out to measure certain parameters that are important for fisheries management. The purpose of this report is to provide the public, anglers and organizations concerned with fishing and fisheries management, with the main results of this survey. The survey was carried out by Québec's ministère du Loisir, de la Chasse et de la Pêche in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of the federal Department of Fisheries and Oceans, Ottawa.

This survey is the third in a series of studies carried out every five years. It is part of a nationally co-ordinated study carried out by provincial and territorial fisheries managers and by several regional offices of the Department of Fisheries and Oceans. Thus, the results provide a better understanding of sport fishing not only in Québec, but also across Canada.

Survey background

In 1970, representatives of the various departments and agencies responsible for sport fishing began to meet regularly in order to discuss their common concerns. During these meetings, now known as the Canadian Sport Fisheries Conferences, it was agreed that effective management required basic information on the extent, socio-economic value and potential of sport fishing in Canada. There was no comprehensive data, but the partial data available was enough to show that millions of people and hundreds of millions of dollars were involved.

It was also recognized that data on sport fishing had to be compiled and published regularly, and that all the agencies concerned had to pool their efforts to supply this type of information. The plans drawn up at the 1972 and 1974 conferences were implemented in January 1976 when thirteen federal, provincial and territorial departments and agencies

began the first series of nationally co-ordinated surveys.

These studies have been a success in several respects. First, they provided Canadians with the first reliable source of data on the scale and importance of sport fishing in Canada. Second, they demonstrated that, in spite of regional disparities, it was possible to gather coherent and comparable data from a series of questions asked on a nationwide basis.

The 1985 survey of sport fishing in Québec was carried out in two stages. In the first, 14,122 people were contacted by telephone to identify those who had fished in 1985. In the second, a detailed questionnaire was sent to each of the 3,718 people who said they had fished in 1985; 2,043 questionnaires (55%) were completed and returned. In addition, questionnaires were mailed to 1,472 nonresidents who had obtained Québec fishing licences in 1985, and 926 of these question-

naires (63%) were completed and returned. Together, these 2,969 questionnaires constitute the basis of the information presented here.

The resource base

Québec contains hundreds of thousands of lakes and waterways and many species of freshwater and saltwater fish. In all, 78 saltwater and 112 freshwater species of fish can be found in Québec's waters; several species are prized by anglers, and some, like salmon, pike, walleye and yellow perch, are also sought by commercial fishermen. Around 15% of the province's territory is specifically set aside for development or conservation of wildlife resources by reserves, outfitters and controlled exploitation zones ("zecs").

RESIDENTS OF QUÉBEC

Participation in sport fishing

In 1985, almost 21% of Québécois 15 years of age and older went sport fishing in Québec at least once. The majority of the 1,082,827 active anglers in 1985 were concentrated in the Montréal and Québec regions (Table 1). However, the participation rate, that is, the proportion of a region's population taking part in an activity, was much higher in the outlying regions, particularly in the Saguenay-Lac-Saint-Jean, Nord-Ouest, Côte-Nord and Nouveau-Québec regions, where more than one person in three fished

Table 1. Participation rate of resident anglers in 1985.

Region	Number of Anglers (15 years & over)	Participation Rate (%)	Percentage of Total (%)
Bas-Saint-Laurent-Gaspésie	53,857	29.1	5.0
Saguenay-Lac-Saint-Jean	83,948	36.3	7.8
Québec	188,533	22.7	17.4
Trois-Rivières	78,500	22.0	7.2
Estrie	38,681	20.4	3.6
Montréal	489,196	16.4	45.2
Outaouais	66,602	30.2	6.1
Nord-Ouest	43,390	36.8	4.0
Côte-Nord and Nouveau Québec	40,120	40.4	3.7
Total	1,082,827	20.8	100.0

Table 2. Numbers and characteristics of anglers in Québec in 1985.

	Residents	Nonresidents		Total
		Canadians	Others	
Active Adult Anglers				
Males	749,685	28,002	25,836	803,523
(Average Age, Years)	37	44	46	37
Females	333,142	2,605	2,425	338,172
(Average Age, Years)	34	39	45	34
Total	1,082,827	30,607	28,261	1,141,695
Children	121,766	7,405	2,870	132,041
Total Active Anglers	1,204,593	38,012	31,131	1,273,736

in 1985. Montréal's population, with a 16.4% participation rate, fished the least.

To this number must be added some 121,766 children under 15 years of age who also went fishing in 1985 (Table 2).

The level of participation observed has increased slightly since 1980, when it stood at 18.4%, which represented 933,000 anglers. Although the participation rate is fairly stable, a constant influx of new anglers is evident: 24% of the active anglers in 1985 had not fished in 1980 (Table 3).

In 1985, the average age of an-

Table 3. Participation rate in previous years of active anglers in Québec in 1985.

Year	Number of Anglers	(%)
1984	983,755	90.9
1983	941,858	87.0
1982	886,786	81.9
1981	831,338	76.8
1980	822,203	75.9

glers was slightly less than 37 and 69% of them were men. Analysis of the distribution of anglers by age reveals that this activity is proportionately more popular with younger

Table 4. Distribution of active resident anglers, (by age) in Québec in 1985.

Age	Men		Women		Total		Participation Rate
	Number	(%)	Number	(%)	Number	(%)	
Less than 25 years	183,632	24.5	100,931	30.3	284,563	26.3	24.3
25 to 34	198,501	26.5	88,440	26.5	286,941	26.5	33.9
35 to 44	150,270	20.0	66,056	19.8	216,326	20.0	23.1
45 to 54	108,252	14.4	43,204	13.0	151,456	14.0	22.1
55 to 64	74,113	9.9	30,947	9.3	105,060	9.7	17.4
65 and over	34,917	4.7	3,564	1.1	38,481	3.5	6.2
TOTAL	749,685	100.0	333,142	100.0	1,082,827	100.0	20.8

Figure 1. Distribution of resident active anglers (by age) in 1985.

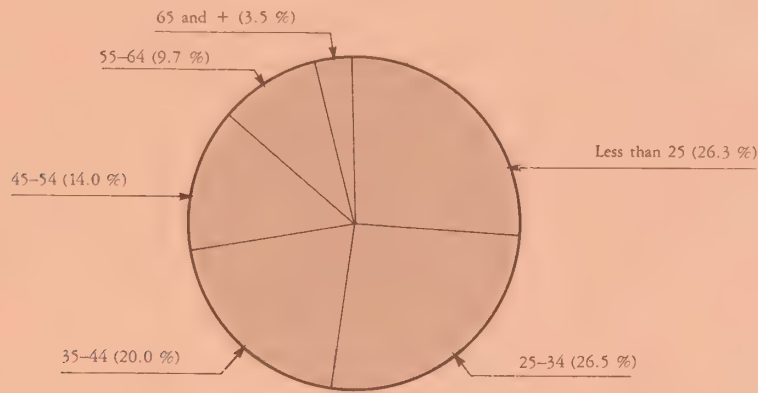


Table 5. Participation rate and distribution of resident anglers by income in 1985.

Income Group	Personal Income (%)	Distribution (%)	Household Income (%)	Distribution (%)
None	16.2	13.4	—	—
Less than \$10,000	13.6	19.8	11.1	9.1
\$10,000 to \$19,999	23.0	25.5	16.4	17.7
\$20,000 to \$29,999	26.8	21.3	23.0	24.9
\$30,000 to \$39,999	32.2	12.7	26.0	21.6
\$40,000 to \$49,999	33.6	4.7	27.4	11.8
\$50,000 and over	25.6	2.6	27.7	14.9

Figure 2. Distribution of active resident anglers (by personal income) in 1985.

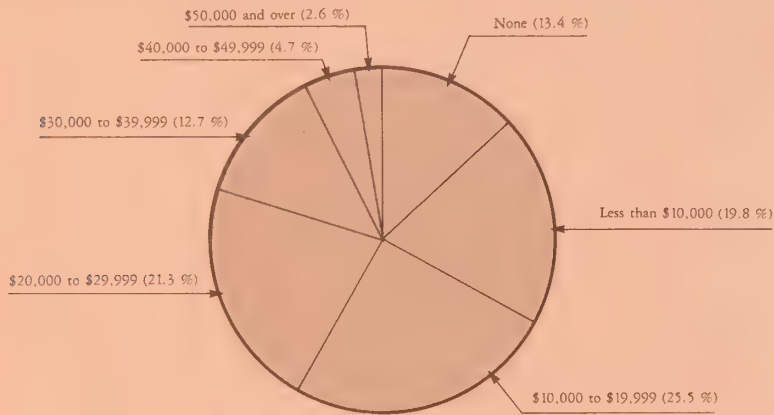
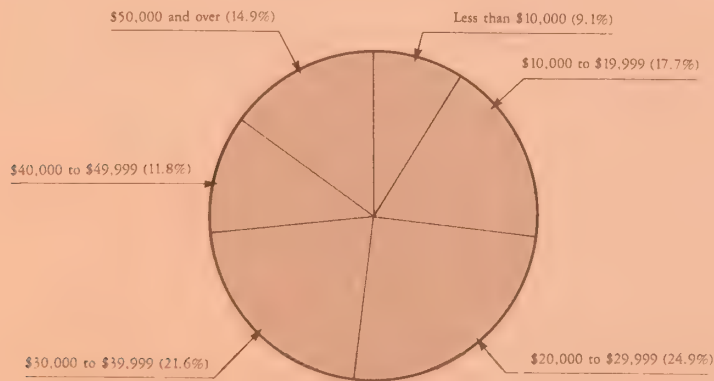


Figure 3. Distribution of active resident anglers (by gross household income) in 1985.



people, particularly those less than 45 years old, and that participation in fishing falls off significantly among those 65 and older (Table 4 and Fig 1).

Although the majority of anglers were in the lowest personal and household income groups, the participation rate in fishing, that is, the proportion of people belonging to an income group who fish, was greatest in the highest income groups (Table 5). Thus, in the case of gross household income, the participation rate went from 11% for those in households earning less than \$10,000 to more than 27% for those in households earning more than \$50,000 a year.

Activity level of anglers

In 1985, Québec anglers went sport fishing more than 15 million days in total, an average of 14.1 days per angler (Table 6). The majority (96%) of this time was spent fishing in fresh water. Winter fishing was also a major activity: 30% of anglers spent almost two million days ice fishing.

Most fishing took place during excursions, that is, on those trips which did not require an overnight stay away from home. Excursions accounted for 70% of angler days (Table 7). However, more than half the anglers went on at least one fishing trip during 1985. In total, 1.8 million fishing trips (requiring an overnight stay away from home) were taken in Québec during 1985; during these trips, anglers spent 4.6 million days fishing, for an average of 2.6 days per trip. An interesting point to note is that the average angler day was the same length — slightly more than five hours — on both excursions and trips.

Regions E and K (see the attached map) were the most heavily fished, with 2.5 and 1.8 million angler days respectively (Table 8 and Fig 4). These two regions alone accounted for more than a quarter of all fishing activity by residents of Québec.

Table 6. Number of days resident anglers spent fishing by in Québec in 1985.

Type of fishing	Number of days	Percentage of Total (%)
Fresh water – ice fishing*	14,668,607 (1,889,821)	95.9 (12.4)
Salt water	619,392	4.1
Total	15,287,999	100.0

*included in figures for fresh water fishing.

Table 7. Fishing trips and excursions taken by resident anglers in 1985.

Number of fishing trips in Québec	1,765,475
Number of angler days – trips	4,621,391
– percentage of total	30
Average number of hours per angler day	5.7
Number of excursions in Québec (no overnight stay away from home)	10,666,608
– percentage of total	70
Average number of hours per angler day	5.2

Table 8. Number of days resident anglers spent fishing in each fishing region of Québec in 1985.

Fishing region (see map)	Number of anglers	Number of days	Average number of days
A	95,025	837,782	8.8
B	92,743	794,976	8.6
C	146,328	1,612,884	11.0
D	97,887	727,709	7.4
E	193,121	2,525,578	13.1
F	86,782	1,007,479	11.6
G	135,243	1,437,072	10.6
H	197,332	1,612,884	8.2
I	170,340	1,187,878	7.0
J	120,707	1,174,118	9.7
K	195,969	1,831,502	9.3
L	34,246	273,655	8.0
M	27,479	264,482	9.6

Note: the total number of anglers is greater than 1,082,827 because some anglers fished in more than one region during the year.

Table 9. Number of days resident anglers spent fishing in each location in Québec in 1985.

Location	Number of days	Percentage of total (%)
Parks and reserves	1,352,852	8.8
Zecs	1,245,685	8.1
Outfitters	565,891	3.7
Fishing ponds	365,988	2.4
Private property	1,943,611	12.7
Public property	9,856,178	64.3
Total	15,330,205	100.0

Most sport fishing took place on public property, that is demesne lands (public land, Crown land), where there were no additional restrictions applying to wildlife beyond those in the fishing regulations (Table 9 and Fig 5). Almost 10 million days were spent fishing on these lands in 1985, 64% of which were expended by residents of the province. A further three million days (20% of the total) were spent fishing in parks, reserves and zecs and at outfitters.

Species Preference

The salmonoids (salmon, landlocked salmon, trout and char) were the species most preferred by anglers. One out of three angler days was devoted to one of these species. Freshwater species, pike and walleye in particular, were also very popular with anglers.

Similarly, 30% of the fish caught were also salmonoids, primarily various species of trout (31.6 million caught). However, the yellow perch was the second most frequently caught species; anglers caught 28.6 million of them in 1985 (Table 10 and Figs 6 & 7). On an annual basis, this works out to 95 perch per angler, while, on average, the people fishing for the various species of trout and char each caught 46 of these fish. On a daily basis, the capture rate was highest for other species of freshwater fish, such as catfish, panfish and tomcod, and for saltwater fish, such as mackerel, cod and capelin.

Anglers estimated that they caught 32 million kilograms of fish in 1985 (Table 11). Almost all these fish were eaten; 75% were eaten by the anglers and their families and 20% were given to relatives and friends. Only 5% of the fish caught were not used.

Figure 4. Fishing regions frequented by resident anglers in Québec in 1985.

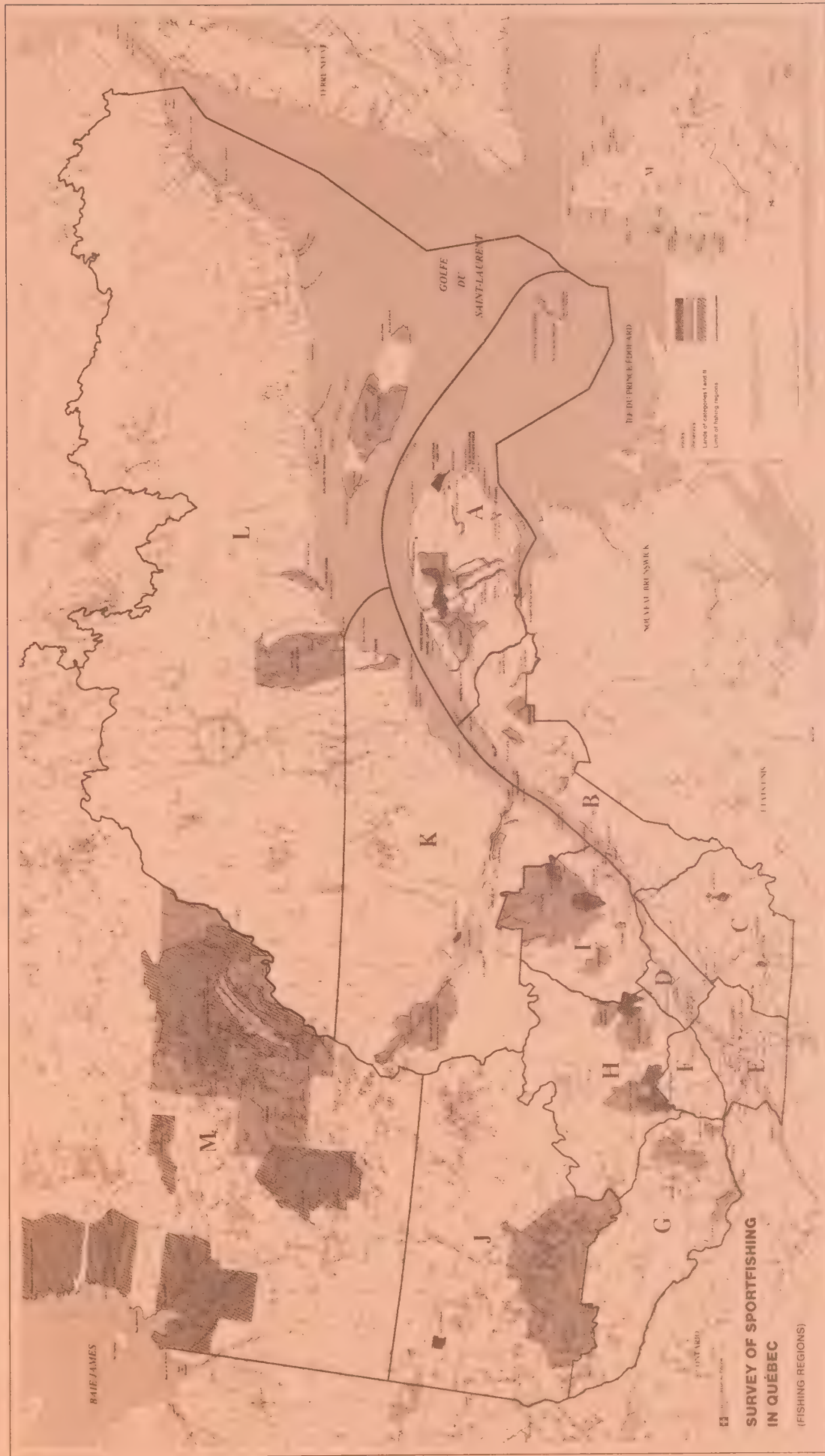


Figure 5. Distribution of days resident anglers spent fishing (by location) in Québec in 1985.

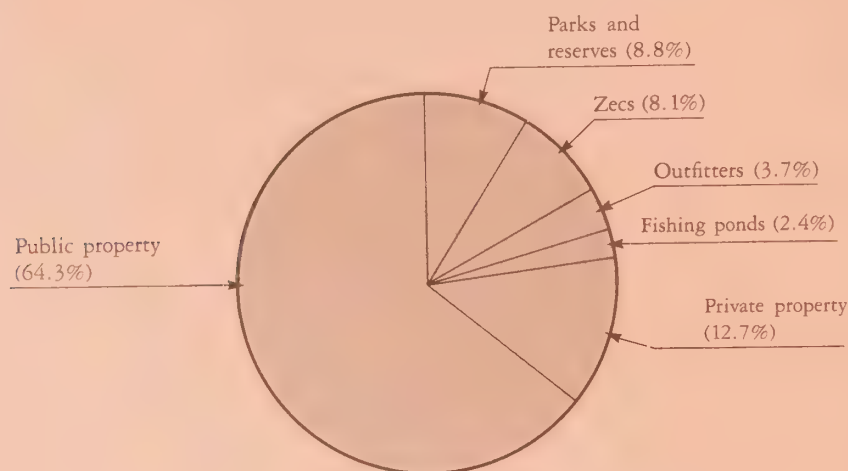


Table 10. Number of days resident anglers spent fishing and number of fish they caught in Québec 1985.

Species of Fish	Number of Days	Catch	Catch per Angler	Catch per Day
Trout, char, landlocked and other salmon	7,391,658	31,768,576	36.48	4.30
Pike	3,757,257	5,017,904	11.26	1.34
Bass	1,833,078	2,414,100	11.62	1.32
Yellow perch	3,098,423	28,566,075	97.95	9.22
Walleye	3,642,373	5,915,395	14.35	1.62
Other fresh water species	1,397,847	18,585,964	83.11	13.30
Other salt water species	594,966	7,924,897	71.54	13.32
Total	21,715,602	100,192,911	92.53	4.61

Note: The total number of days is greater than 15,287,999 because several species were fished for during the same angler day.

Figure 6. Distribution of fish caught by resident anglers in Québec in 1985.

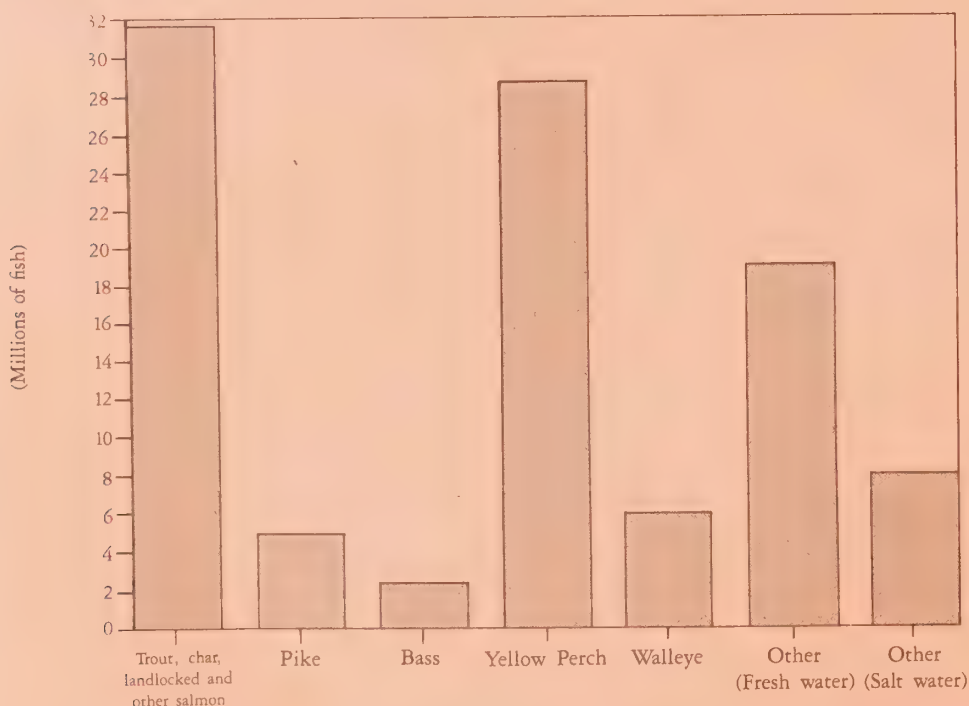


Table 11. Consumption of fish caught by resident anglers in Québec in 1985.

Number of fish caught	100,192,911
Total weight (kg)	32,184,502
Amount eaten	24,241,731
— % of total	75.3
Amount given away	6,355,791
— % of total	19.8
Amount unused	1,586,980
— % of total	4.9

Factors influencing fishing enjoyment

One section of this survey deals with the relative importance anglers attach to various elements which influence their enjoyment of sport fishing. It is somewhat surprising that the actual point of fishing, that is, the size and number of fish caught, is among the elements to which the anglers attach the least importance, while elements such as the quality of the water, the natural beauty of the surroundings and the escape from routine are the factors anglers ascribe as the most important (Table 12).

Fishing outside Québec

In 1985, 7.6% of the active anglers in Québec also went fishing outside the province. These 81,947 people spent more than 400,000 days fishing outside Québec, primarily in the United States (38%) and in Ontario (33%). The majority of these anglers, 72%, fished during a trip taken for reasons other than fishing.

Anglers' expenditures

Major amounts of money are spent every year on sport fishing. These expenditures can be grouped into two categories: the purchase of durable equipment and goods which can be used for things besides fishing, and direct expenditures incurred while fishing.

Around 30% of anglers made major purchases of durable goods and equipment during 1985, for a total value of \$819 million (Table 13).

Figure 7. Species preferred by resident anglers in Québec 1985.

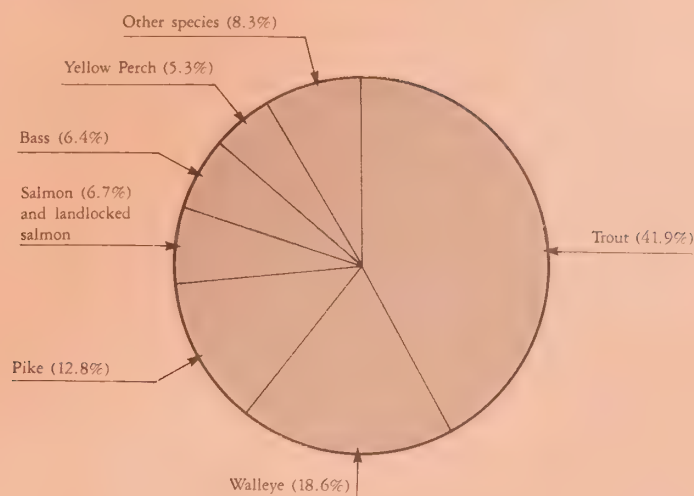


Table 12. Factors affecting resident anglers fishing enjoyment in Québec in 1985.

Factors	Very Important (%)	Important (%)	Not very Important (%)	No Importance (%)
Quality of water	62.7	27.6	4.1	5.6
Escape routine	51.6	27.5	12.3	8.6
Beauty of surroundings	49.9	37.4	8.4	4.3
Angling for wild fish	41.7	30.2	13.9	14.2
Weather conditions	36.7	33.4	20.0	9.9
Catch as a source of food	32.2	35.3	17.6	14.9
Access to wilderness	31.5	32.5	19.2	16.8
Privacy	28.2	32.0	23.1	16.7
Catch species desired	22.4	32.8	23.3	21.5
Number of fish caught	19.5	37.1	30.2	13.2
Size of fish caught	12.4	35.3	37.7	14.6

and Figs 8 & 9). Of this amount, 70% was attributable to sport fishing, that is, on average, these purchases were used 70% of the time for sport fishing. Thus, \$574 mil-

lion spent to buy boats, motors, cottages, camping equipment, vehicles and special clothing was attributable to sport fishing.

In addition, \$535 million was

spent while sport fishing (Table 14 and Fig 10). This represents all anglers' direct expenses for transportation, accommodation, food, fishing gear, and so on. On average, each

Table 13. Distribution of major purchases attributable (in whole or in part) to sport fishing made by resident anglers in Québec in 1985.

Expenses	Total Investment \$	Investment Attributable to Sport fishing \$	Average Value \$	Percentage Attributable to Sport fishing (%)
Boats and related equipment	168,233,147	149,076,513	905	88.6
Camping equipment	77,472,717	45,997,915	581	59.4
Special vehicles (ATV, etc.)	303,849,149	159,277,642	2,310	52.4
Land/buildings	223,676,736	180,531,381	2,527	80.7
Special clothing	46,059,892	39,299,348	149	85.3
Total	819,291,641	574,182,799	1,809	70.1

Figure 8. Distribution of total investment made by resident anglers in Québec in 1985.

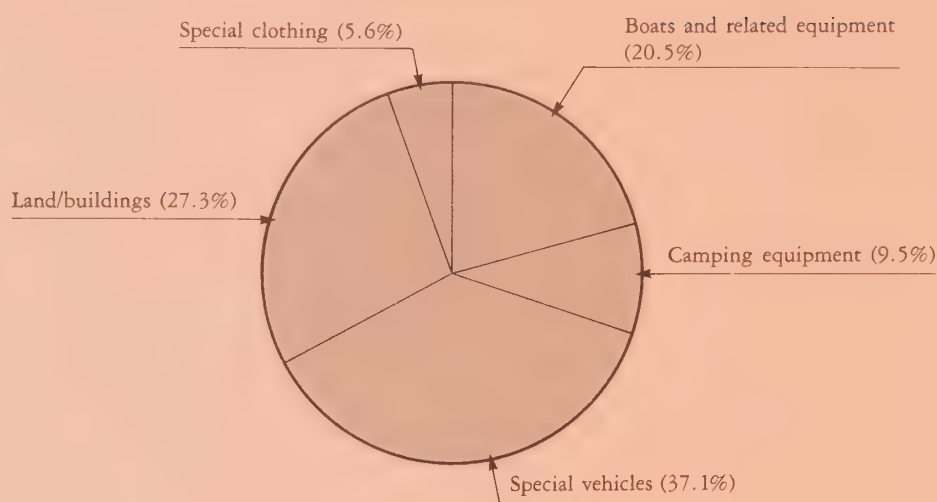


Figure 9. Distribution of investments made by resident anglers attributable to sport fishing in Québec in 1985.

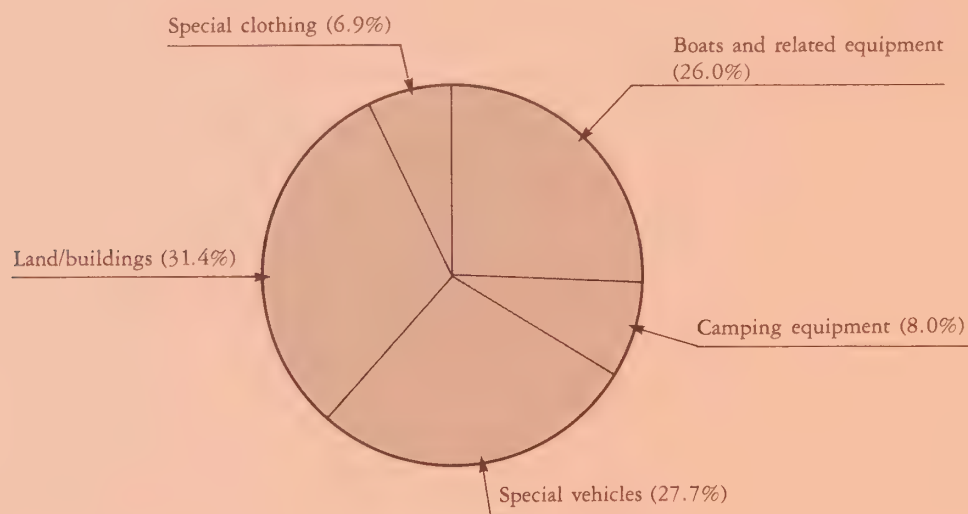


Table 14. Direct expenditures made by resident anglers for sport fishing in Québec in 1985.

Type of expenditures	Amount of expenditures \$	Percentage of total (%)
Food	155,061,056	29.0
Lodging	45,837,254	8.6
Transportation	117,214,488	21.9
Boats (rental/operating expenses)	42,075,251	7.8
Fishing gear	64,029,387	12.0
Live bait	16,786,834	3.1
Fishing access fees and licence fees	30,102,983	5.6
Packages	59,638,274	11.1
Other	4,642,276	0.9
Total	535,387,803	100.0

Figure 10. Direct expenditures for sport fishing made by resident anglers in Québec in 1985.

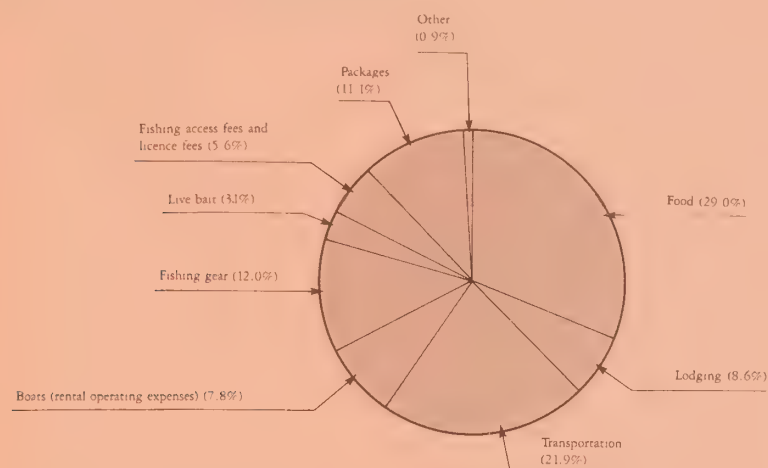


Table 15. Current value of fishing equipment owned by resident anglers in Québec in 1985.

Type of equipment	Value (\$)	Number of Households	Average Value per Household
Fishing gear	308,730,070	758,546	407
Boats and equipment	655,324,267	373,504	1,754
Camping gear	425,840,033	341,851	1,246
Other	173,637,001	157,501	1,102
Total	1,563,531,371	N/A	2,040

Note: The value of equipment in Québec households in which at least one member went fishing in 1985 (766,554 households).

angler spent \$494 to fish in 1985, \$35 per angler day. Expenditures for food and transportation were the largest, more than 50% of the total.

This survey also attempts to evaluate the current value of the equipment owned by Québec households that is used exclusively for sport fishing. Québec households, according to the survey estimates, had equipment worth more than \$1.5 billion (Table 15). The largest amounts, both in total terms and in average value per household possessing such equipment, were for boats and related equipment like motors and trailers. Moreover, almost all households (98%) in which one of the members fished in 1985 had fishing gear, such as fishing rods and reels, and, on average, the current value (in 1985) of the gear was \$407.

NONRESIDENT ANGLERS SPORT FISHING IN QUÉBEC

Participation in sport fishing

In 1985, 60,076 nonresidents purchased Québec sport fishing licences. (Table 16). Of these, 58,868 actually fished; they came primarily from Ontario, Pennsylvania, New York and Ohio. Some 10,275 non-resident children also fished in Québec in 1985.

The majority of these anglers (92%) were men and their average age was forty-five (Fig 11). On average, nonresident anglers were better off than Québec anglers; more than 36% of them had a personal income over \$40,000 and almost 60% of them were members of a household with an income higher than \$40,000 (Figs 12 & 13).

In 1985, these anglers made 146,940 fishing trips to Québec; for

Table 16. Origin of nonresident licensed anglers in Québec in 1985.

Province-State Group	Number
Canadians	
Maritimes	842
Ontario	30,427
Other	159
Canadian Total	31,428
Non-Canadians	
Pennsylvania	9,024
New York	5,940
Ohio	5,525
New England	3,088
Other	5,071
Non-Canadian Total	28,648
Grand Total	60,076

Figure 11. Distribution of nonresident anglers (by age) in Québec in 1985.

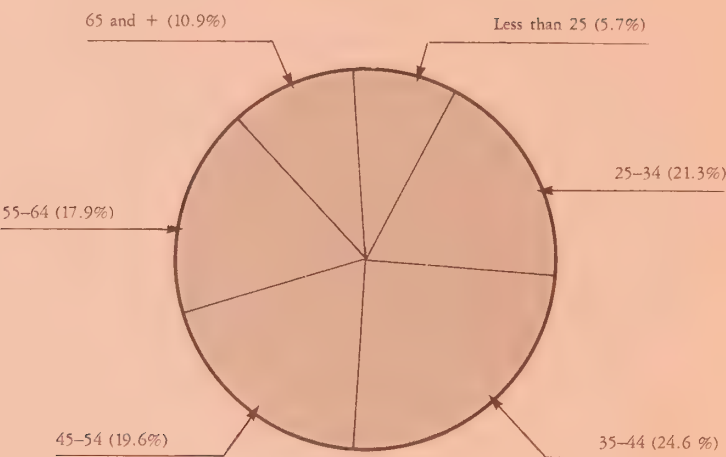


Figure 12. Distribution of nonresident anglers (by personal annual income) in Québec in 1985.

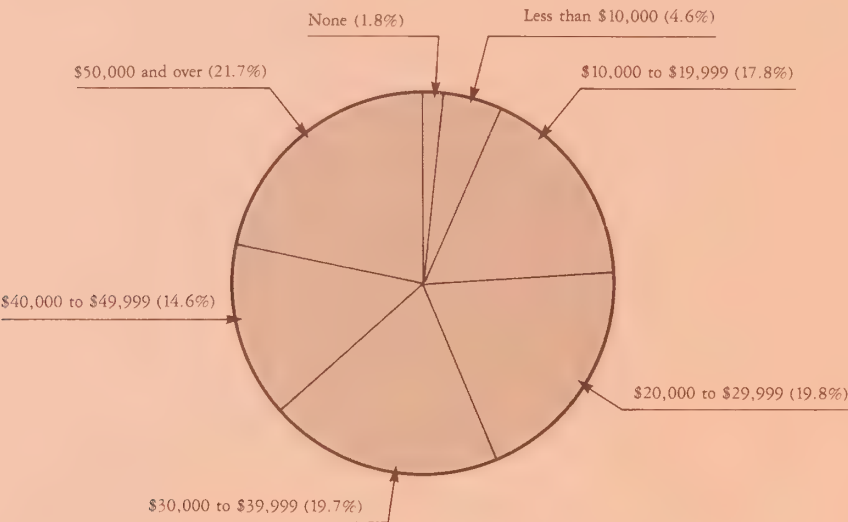
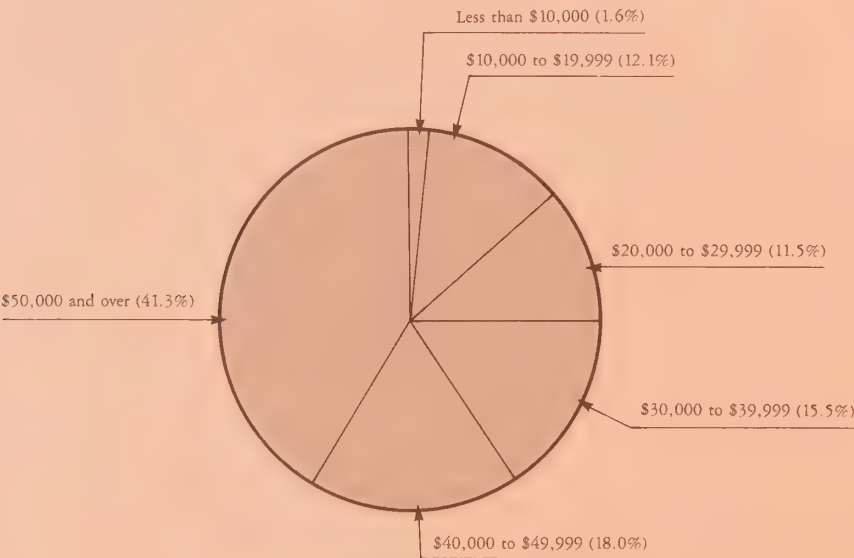


Figure 13. Distribution of nonresident anglers (by gross household income) in Québec in 1985.



71% of these cases, fishing was the main reason for their trip to Québec; (Table 17). These trips resulted in 566,443 overnight stays in Québec, primarily at the homes of relatives and friends (38.5%) and at outfitters (21.0%).

In total, nonresidents spent 593,492 days fishing in Québec (Table 18), of which the overwhelming majority (93.5%) were expended during trips to the province; only 38,639 fishing excursions (trips without an overnight stay away from home) were made by nonresidents in 1985 (Table 17).

Approximately 25% of these non-resident anglers frequented outfitters camps or lodges, a proportion twice as great as that for resident anglers. Proportionately, nonresidents visited locations that offered organized fishing, such as parks, reserves, zecs and outfitters, more often than did residents (Table 19 and Fig 14).

Walleye was the species most preferred by nonresident anglers; 60% of them fished for walleye in Québec in 1985 for a total of 304,478 angler days (Table 20 and Fig 15). Americans comprised the majority of

Table 17. Trip characteristics of nonresident anglers in Québec in 1985.

Trips to Québec – All reasons (by licensed anglers)	223,171
Fishing trips to Québec – % of trips for fishing	146,940 66
Days Spent in Québec – All reasons	1,007,302
Days fished – % of days for fishing	554,853 55
Fishing trip – main reason for trip – secondary reason for trip – decided upon after arrival	104,815 35,668 6,457
Fishing excursions (no overnight stay away from home)	38,639
Accommodation used: (% of nights)	
Friends and relatives (including cottages)	38.5
Public and private campgrounds	16.9
Outfitters	21.0
Hotel, motel or inn	15.7
Other	7.9
Total nights spent on fishing trips	566,443

Table 18. Number of days nonresident anglers spent fishing in Québec in 1985.

Type of Fishing	Number of days	Percentage of Total (%)
Fresh water – ice fishing*	592,309 (17,367)	99.8 (2.9)
Salt water	1,183	0.2
Total	593,492	100.0

*Included in figures for fresh-water fishing.

Table 19. Number of days nonresident anglers spent fishing by location in Québec in 1985.

Location	Number of Days	Percentage of Total (%)
Parks and reserves	85,313	4.4
Zecs	53,708	9.1
Outfitters	97,422	16.4
Fishing ponds	1,849	0.3
Private property	81,982	13.8
Public property	273,218	46.0
Total	593,492	100.0

this group with 80% of them fishing for walleye in Québec in 1985. Of the nonresidents from other provinces, 72% fished for species of trout and/or char.

Walleye was also the most frequently caught species accounting for 42% of the 2.2 million fish caught. On average, each nonresident who fished for walleye caught 26 of them in 1985, which is slightly more than three walleye per angler day.

Approximately 10% of nonresident anglers made major purchases of durable goods and equipment in Québec in 1985. In total, the portion of these purchases attributable to sport fishing was \$12.5 million (Table 21 and Fig 16).

Nonresidents spent \$51.9 million in Québec to sport fish, an average

Figure 14. Distribution of days nonresident anglers spent fishing (by location) in Québec in 1985.

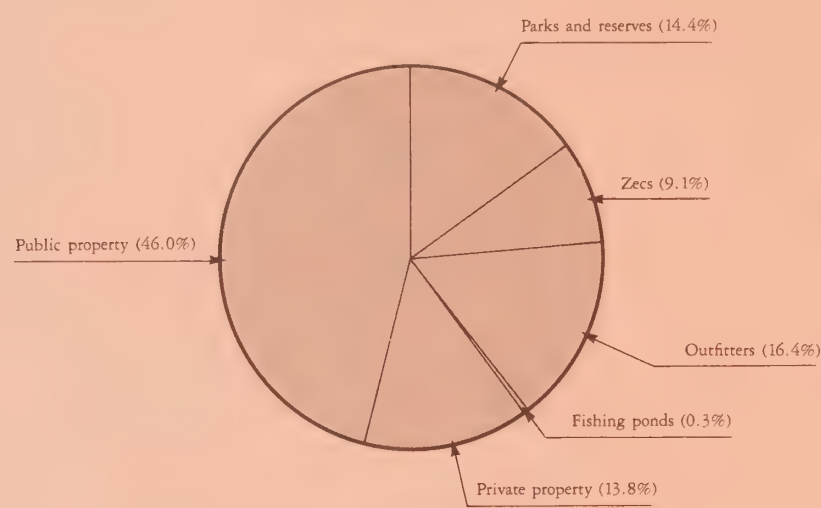


Table 20. Number of days nonresident anglers spent fishing and number of fish they caught in Québec in 1985.

Species of Fish	Number of Days	Catch	Catch per Angler	Catch per Angler Day
Trout, char, landlocked and other salmon	269,368	466,784	14.1	1.7
Pike	256,597	410,191	12.8	1.6
Bass	93,982	113,208	11.8	1.2
Yellow perch	50,857	196,730	35.7	3.9
Walleye	304,478	932,951	26.0	3.1
Other species	29,457	83,831	31.4	2.8
Total	1,004,739	2,203,695	37.4	2.2

Note: The total number of days exceeds 593,492 because several species were fished for during the same angler day.

Figure 15. Distribution of fish caught by nonresident anglers in Québec in 1985.

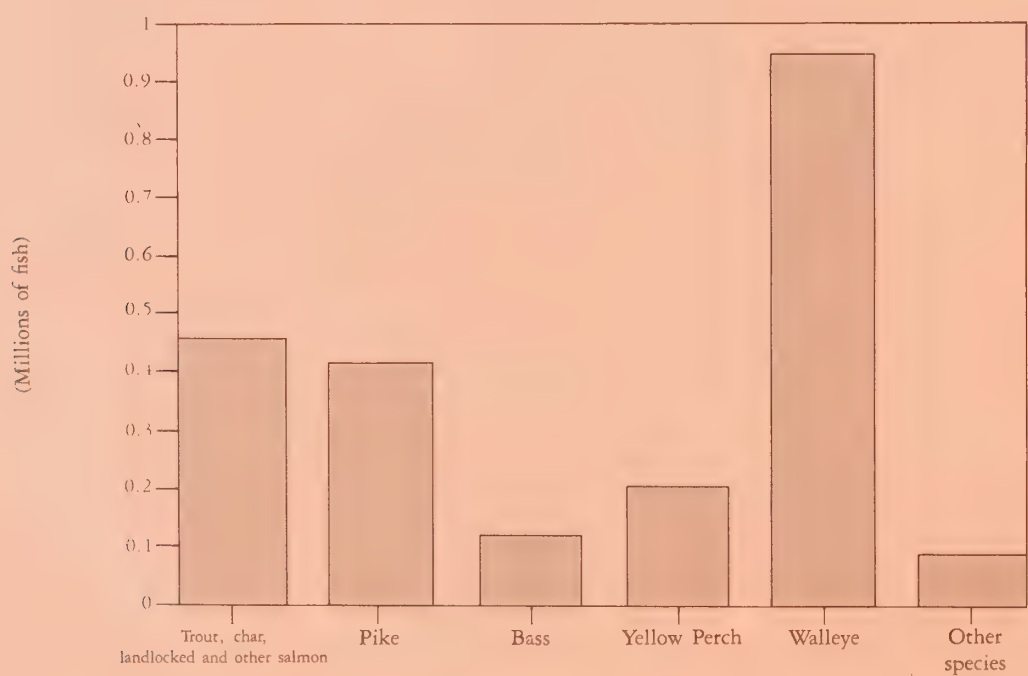


Table 21. Distribution of major purchases made by nonresident anglers attributable (in whole or in part) to sport fishing in Québec in 1985.

Purchases	Total Investment \$	Investment Attributable to Sport fishing \$	Average Value \$	Investment Attributable to Sport fishing (%)
Boats and related equipment	3,858,817	3,174,818	1,247	82.3
Camping equipment	853,678	720,263	553	84.4
Special vehicles (ATVs, etc.)	3,827,456	2,637,550	3,092	68.9
Land/buildings	8,480,708	4,989,271	2,421	58.8
Special clothing	1,162,335	1,020,719	262	87.8
Total	18,182,994	12,542,621	2,108	69.0

Figure 16. Distribution of investments made by nonresident anglers attributable to sport fishing in Québec in 1985.

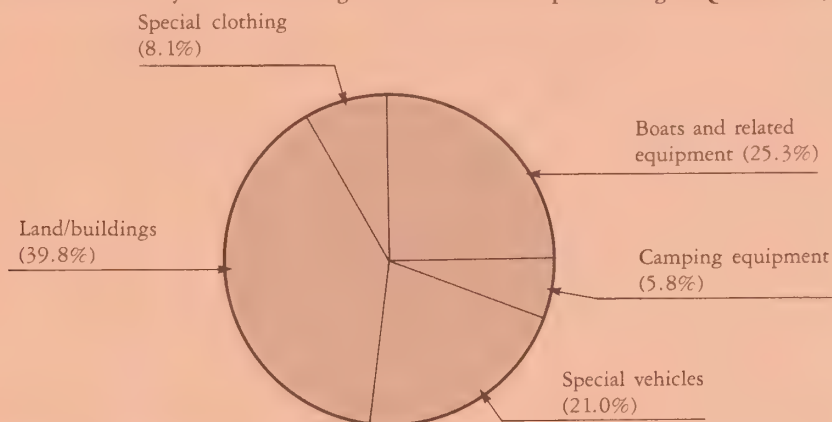
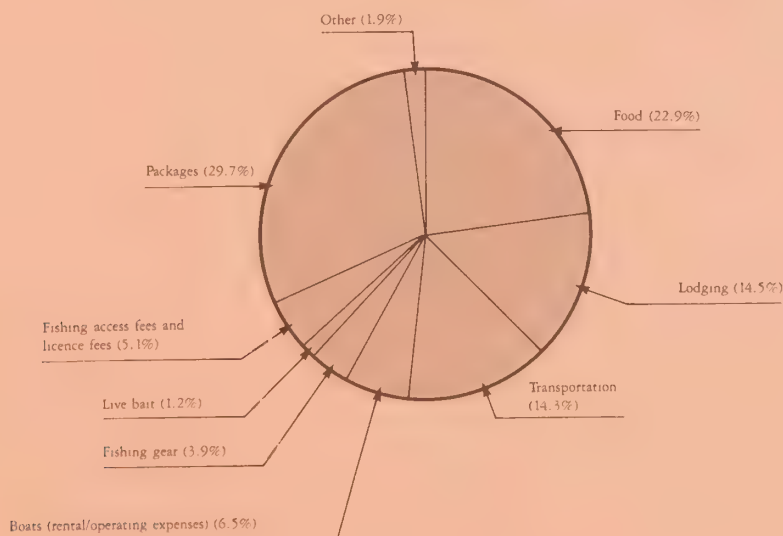


Table 22. Direct expenditures for sport fishing made by nonresident anglers in Québec in 1985.

Type of Expenditures	Amount \$	Percentage of Total (%)
Food	11,898,488	22.9
Lodging	7,527,871	14.5
Transportation	7,401,497	14.3
Boats (rental/operating expenses)	3,370,037	6.5
Fishing gear	2,038,281	3.9
Live bait	650,662	1.2
Fishing access fees and licence fees	2,633,564	5.1
Packages	15,393,308	29.7
Other	987,340	1.9
Total	51,901,048	100.0

Figure 17. Direct expenditures for sport fishing made by nonresident anglers in Québec in 1985.



of \$882 per angler (Table 22 and Fig 17). Almost 30% of this amount represents package deals purchased by nonresidents, principally Americans (73% of the total spent on package deals). Approximately one out of every four nonresident anglers purchased a package in 1985.

Conclusion

The results summarized in the preceding pages indicate the im-

portance of sport fishing in Québec. It is estimated that more than 1.2 million Québécois of all ages went sport fishing in the province in 1985. More than 15 million days, five hours a day on average, were devoted to this sport. Québec also welcomed almost 60,000 nonresident anglers, the majority of whom came especially to fish. Fishing is also important because of the great pressure these anglers put on the fish; they caught more than 100 mil-

lion fish, representing a total weight of 32 million kilograms, most of which were eaten.

Finally, sport fishing represents a major economic activity; \$1.2 billion in expenditures can be attributed to this activity. Approximately half of this amount was spent directly on fishing, while the rest was spent on purchases of durable goods and equipment, such as boats, cottages and ATVs.





**Direction générale de la ressource
faunique
Ministère du Loisir,
de la Chasse et de la Pêche
Québec (Québec)
G1R 4Y1**

**Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6**

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**"Sport Fishing in Québec in 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6**

or

**"Sport Fishing in Québec in 1985"
Direction des communications
Ministère du Loisir, de la Chasse
et de la Pêche
150 St. Cyrille Blvd., East
Ground Floor
Québec, Québec
G1R 4Y1**

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SPORT FISHING IN SASKATCHEWAN, 1985

Introduction

Details about sport fishing in Saskatchewan in 1985 were obtained to evaluate the importance of this fishery. The work was done in 1986 by the Fisheries Branch of Saskatchewan Parks, Recreation and Culture in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sportfishing in Saskatchewan". The second was reported in two publications, "Sportfishing in Saskatchewan, 1980", which contained a summary of the major results, and, "1980 Survey of Sport Fishing in Saskatchewan", which contained detailed information. The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic information on Saskatchewan's sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Sixty percent of the questionnaires sent to persons who had purchased angling licences in Saskatchewan in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

Sixty-eight species of fish occur in Saskatchewan, of which 13 are of interest to anglers. The main species taken are pike, walleye and perch. Six species of trout plus Arctic grayling are pursued by anglers



seeking a variety of fishing experiences. Goldeye, sturgeon and whitefish are among the rarer treats for adventuresome anglers. Overall, walleye is the most preferred species in Saskatchewan.

The fish resource of Saskatchewan is found in its lakes, streams and reservoirs. There are more than 94,000 lakes in the province with a total surface area in excess of 67,000 square kilometres. Most lakes are

very small. The larger lakes, although few in number, contain more than half the surface water area. Most of the larger lakes, and many of the smaller ones, support sport fisheries.

There is a marked difference in the distribution of lakes and streams and the people who use them: more than 97% of the people live south of the 54th parallel, whereas more than 90% of the lakes and streams are

north of this line. Many northern lakes are accessible only by aircraft. Those that are accessible by road are especially attractive to anglers because of their wilderness settings.

Angler Profile

There were 248,899 anglers in Saskatchewan in 1985 (Table 1). These included 180,877 licenced anglers as well as an estimated 21,500

Table 1. Numbers and characteristics of anglers in Saskatchewan in 1985.

	Resident	Nonresident		Total
		Canadian (a)	Other	
Angling Population				
Licensed Anglers (b)	136,261	24,046	18,738	179,045
One-day licences (c)	1,832	0	0	1,832
Saskatchewan Senior Citizens	21,500	0	0	21,500
Total	159,593	24,046	18,738	202,377
Active Adult Anglers				
Males	106,126	18,820	15,665	140,611
(Average Age, Years)	42	42	47	43
Females	31,445	4,332	3,073	38,850
(Average Age, Years)	44	39	49	44
Total	137,571	23,152	18,738	179,461
Children (d)	58,315	9,448	1,675	69,438
Total Active Anglers (All Ages)	195,886	32,600	20,413	248,899

(a) Canadians who live in provinces/territories other than Saskatchewan and who fished in Saskatchewan in 1985.

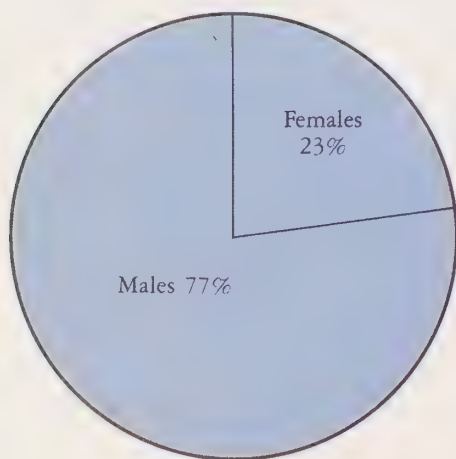
(b) Individuals who purchased angling licences in Saskatchewan in 1985.

(c) This group was not included in the survey and is therefore not represented in the information presented in this bulletin.

(d) Individuals under 16 years of age.

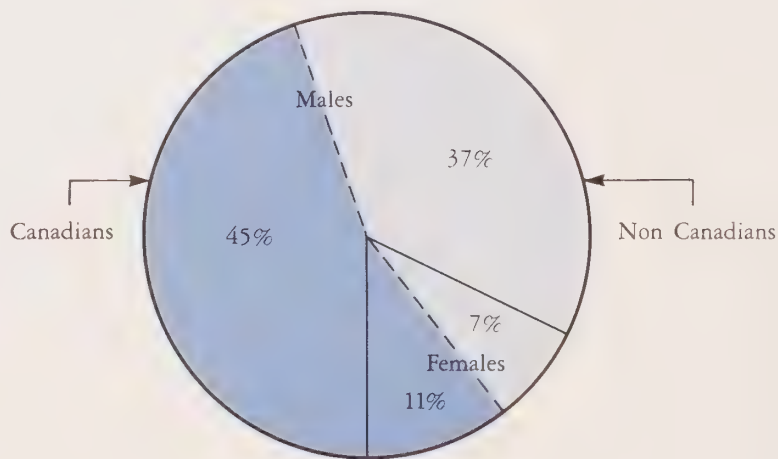
Fig. 1. Sex composition of active anglers.

A) Resident



137,571 active anglers.

B) Nonresident



41,890 active anglers.

Saskatchewan senior citizens and 69,438 children who did not require angling licences. There were 159,593 resident anglers and 42,784 Canadian and other nonresident anglers. About 87% of the residents and 98% of the nonresidents were active anglers having fished in 1985. Seventy-seven percent of the resident anglers and 82% of the nonresident anglers were male (Figure 1).

The number of active adult anglers has declined from 183,197 in 1975 to 179,461 in 1985 but the number of children who fish has increased from 59,850 in 1975 to 69,438 in 1985 (Table 2). As a result the total number of active anglers has increased from 243,047 in 1975 to 248,899 in 1985. Numbers of resident anglers have increased from 188,521 in 1975 to 195,886

in 1985 but the numbers of non-Canadian nonresidents have decreased from 23,288 in 1975 to 20,413 in 1985 (Table 3). More Canadian anglers were in Saskatchewan in 1980 than in 1975 or 1985.

About 56% of the nonresident anglers in 1985 were Canadians, mainly from Alberta, Manitoba and British Columbia (Table 4). Most of the remaining nonresident anglers were United States citizens who came from the West North Central and Mountain regions (Figure 2). Sixty-two percent of the U.S. residents who fished in Saskatchewan in 1985 came from seven states: Montana, Colorado, Minnesota, Nebraska, North Dakota, Wyoming and Iowa.

Table 2. Comparison of numbers of anglers in Saskatchewan, 1975, 1980 and 1985.

	1975	1980	1985
Angling population	197,578	216,373(a)	202,377(b)
Active adult anglers	183,197	181,342	179,461
Children	59,850	47,123	69,438
Total active anglers	243,047	228,465	248,899

(a) Includes 9,681 One-day Resident licences issued in 1980.

(b) Includes 1,832 One-day licences issued in 1985.

Table 3. Comparison of numbers of active resident and nonresident anglers in Saskatchewan, 1975, 1980 and 1985.

Year	Resident	Nonresident		Total
		Canadian	Other	
1975	188,521	31,238	23,288	243,047
1980	171,846	34,894	21,725	228,465
1985	195,886	32,600	20,413	248,899

Table 4. Origin of nonresident licensed anglers in Saskatchewan in 1985.

Province-State Group	Number
Canadian	
Ontario	1,352
Manitoba	3,859
Alberta	15,305
British Columbia	3,424
Yukon Territory	106
Canadian Total	24,046
Non-Canadian	
Mid-Atlantic, U.S.A.	422
East North Central, U.S.A.	1,868
West North Central, U.S.A.	6,950
Mountain, U.S.A.	6,526
Pacific, U.S.A.	1,444
South Atlantic, U.S.A.	338
East South Central, U.S.A.	...
West South Central, U.S.A.	1,190
Non-Canadian Total	18,738
Grand Total	42,784

Motivations

Eighty percent of the Saskatchewan residents and 49% of the nonresidents who held Saskatchewan licences in 1985 had also fished in the province in 1984 (Table 5). In addition, 67% of the resident and 31% of the nonresident anglers fished in Saskatchewan at the time of the previous survey 5 years ago. Nineteen percent of the nonresident anglers indicated Saskatchewan was the only place they fished in 1985. Only 21,736 resident anglers (14% of licensed adult anglers) fished outside Saskatchewan in 1985, usually while on vacation (Table 6).

Nonresident anglers made 224,732 trips to Saskatchewan in 1985, or about 5 trips per angler of which 43% were for fishing (Table 7). On average, they fished on two of these trips. For 72% of their fishing trips, fishing was the main reason for visiting the province. Sixty-four percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 7 nights).

The use of accommodations appears to reflect the origins of the nonresident anglers. Approximately 28% of Canadians and 13% of non-Canadians stayed with friends and relatives; 16% of Canadians and 9% of non-Canadians stayed in tents or trailers; and 12% of Canadians and

Fig. 2. Regional distribution of United States residents who held Saskatchewan angling licences in 1985.



Table 5. Fishing activity in Saskatchewan in the last five years (based on angler population in 1985).

Year of Activity	Resident	Non-resident	All Anglers
	%	%	%
1984	79.8	49.0	73.2
1983	79.4	49.0	72.9
1982	74.3	40.5	67.1
1981	70.7	35.5	63.2
1980	66.7	31.3	59.2

Table 6. Reasons for residents of Saskatchewan fishing outside the province in 1985.

Reasons	Number	%
Species not Available	2,721	12.5
On Vacation, Business etc.	14,663	67.5
Other Reasons	4,352	20.0
Total	21,736	100.0

Table 7. Trip characteristics of nonresident anglers in Saskatchewan in 1985.

Characteristics	Number
Trips to Saskatchewan – All Reasons	224,732
Fishing Trips to Saskatchewan	96,580
– %	43
Days Spent For All Reasons	820,069
Days Fished	328,416
– %	40
Fishing Trips – Main Reason for Visit	69,957
– Secondary Reason	20,166
– Decided Upon After Arrival	6,458
Day Trips for Fishing	34,768
Overnight Trips for Fishing	61,812
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	21.9
Tent or Trailer	13.1
Cottages	12.9
Camping in Provincial Parks	9.3
Camping on Crown Land	2.5
Camping in Commercial Camp Grounds	5.3
Fishing Lodge or Camps	20.0
Commercial Accommodation	6.7
Other Accommodation	8.3
Total Nights Spent on Fishing Trips	420,821

Table 8. Relative importance of factors affecting fishing enjoyment in Saskatchewan in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Quality of Water	14.3	13.4	14.0
2. Beauty of Surroundings	13.6	13.0	13.4
3. Weather Conditions	12.2	10.1	11.7
4. Escape Routine	10.5	10.2	10.4
5. Access to Wilderness	8.8	9.2	8.9
6. Number of Fish Caught	8.2	8.0	8.2
7. Privacy	7.7	9.3	8.1
8. Catch Species Desired	7.6	8.5	7.9
9. Size of Fish Caught	7.2	8.1	7.4
10. Angling for Wild Fish	5.5	6.9	5.9
11. Catch as a Source of Food	4.4	3.3	4.1

32% of non-Canadians stayed at fishing lodges or camps.

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in Saskatchewan (Table 8). The quality of the water, the natural beauty of the province and favorable weather conditions, were important components of the environmental factor. Other important factors were the ability to escape from work or household routine, the number and size of fish caught, access to wilderness areas, privacy from other fishing parties (particularly for nonresidents) and success in catching the desired species. Anglers ascribed little or no importance to catching fish for food and to angling for wild (as opposed to hatchery) fish.

In 1985, 29% of resident anglers hunted big game in the province (Table 9). Fifteen percent hunted small game, while 23% hunted birds. Overall 28% of resident anglers indicated membership in a national or provincial wildlife organization or a local fish and game club.

Approximately 94% of all non-resident anglers indicated they would return to Saskatchewan to fish in the future, but 51% said they would not return and 31% said they would have substituted other activities if sport fishing was no longer available in the province (Tables 10

Table 9. Wildlife related activities of Saskatchewan residents in 1985.

Activity	%
Hunting – 1. Big Game	28.9
2. Small Game	14.9
3. Wildlife Birds	23.0
4. Nature Photography	25.1
5. Bird Watching	21.0
6. Feeding Wildlife	24.6

and 11). Overall, 67% of nonresident anglers rated the quality of fishing in Saskatchewan as good to excellent, 15% rated fishing as fair and the remaining 18% of nonresident anglers rated the quality as poor or chose not to answer the question at all (Table 12).

Fishing Effort

Angling in Saskatchewan is a major recreational activity. Anglers fished a total of about 1.9 million days in 1985 (Table 13), about 5%

Table 10. Projected future participation of active nonresident anglers in Saskatchewan.

Return	No.	%
Yes	39,219	93.6
No	1,247	3.0
No Opinion	1,424	3.4
Total	41,890	100.0

Table 11. Activities of active nonresident anglers if no fishing opportunities in Saskatchewan in 1985.

Activity	Number	%
Stay Shorter Time	5,761	13.8
Substitute Other Activities	13,143	31.4
Not Come at All	21,551	51.4
No Opinion	1,435	3.4
Total	41,890	100.0

Table 12. Attitude of active nonresident anglers on quality of fishing in Saskatchewan in 1985.

Rating	Number	%
Excellent	7,479	17.9
Very Good	8,374	20.0
Good	12,356	29.5
Fair	6,133	14.6
Poor	6,229	14.9
No Opinion	1,319	3.1
Total	41,890	100.0

less than in 1975 and 1980. On the average, each angler spent 10.8 days fishing in 1985. Resident anglers fished an average of 11.8 days, non-resident Canadians fished 7.8 days, and other nonresidents fished 7.9 days (Table 14). Overall, resident anglers fished less in 1985 than in 1975 or 1980 and nonresident anglers fished more.

Most fishing occurred during the summer period April through September (Figure 3). During that time 81% of resident, 91% of nonresident Canadian and 97% of other nonresident fishing effort was expended.

Saskatchewan was divided into nine fishing areas (Figure 4) for the purposes of the survey. As in 1980, resident anglers tended to fish in areas close to their homes, spending 83% of their time in the southern half of the province. Nonresidents favored the northern half spending 49% of their time there, of which 41% was spent in the North Central area alone. Overall, the South and North Central areas were the most heavily fished.

Table 13. Angling effort (in angler-days) by season in Saskatchewan in 1985.

Season	Resident	Nonresident	Total
January – March	202,555	8,472	211,027
April – June	491,240	146,144	637,384
July – September	811,845	161,394	973,239
October – December	111,987	12,406	124,393
Total	1,617,627	328,416	1,946,043

Table 14. Angling effort by active adult anglers in Saskatchewan, 1975, 1980 and 1985.

Year		Resident	Nonresident	Total
1975	No. of angler-days	1,723,522	294,730	2,018,252
	Average/angler	12.3	6.9	11.0
1980	No. of angler-days	1,778,376	293,309	2,071,685
	Average/angler	13.3	6.2	11.4
1985	No. of angler-days	1,617,627	328,416	1,946,043
	Average/angler	11.8	7.8	10.8

Harvest

The recreational fishery is one of major dimensions and importance. In 1985, anglers caught an estimated 8.2 million fish of all species and retained 4.7 million of them (Table 15). These fish weighed about 4.2 million kilograms or 9.3 million pounds. Resident anglers caught 84% of the fish harvested. Pike, walleye and perch, in that order, comprised 92% of the harvest by number (Figure 5). On the average, anglers retained 58% of the fish they caught (Table 16). Resident anglers kept 66% of the fish they caught, nonresident Canadians kept 56% and non-Canadian nonresidents kept 26%. Anglers kept a higher proportion of the stocked trout species (i.e., rainbow, brook and brown

Fig. 3. Angling effort by season, Saskatchewan, 1985.

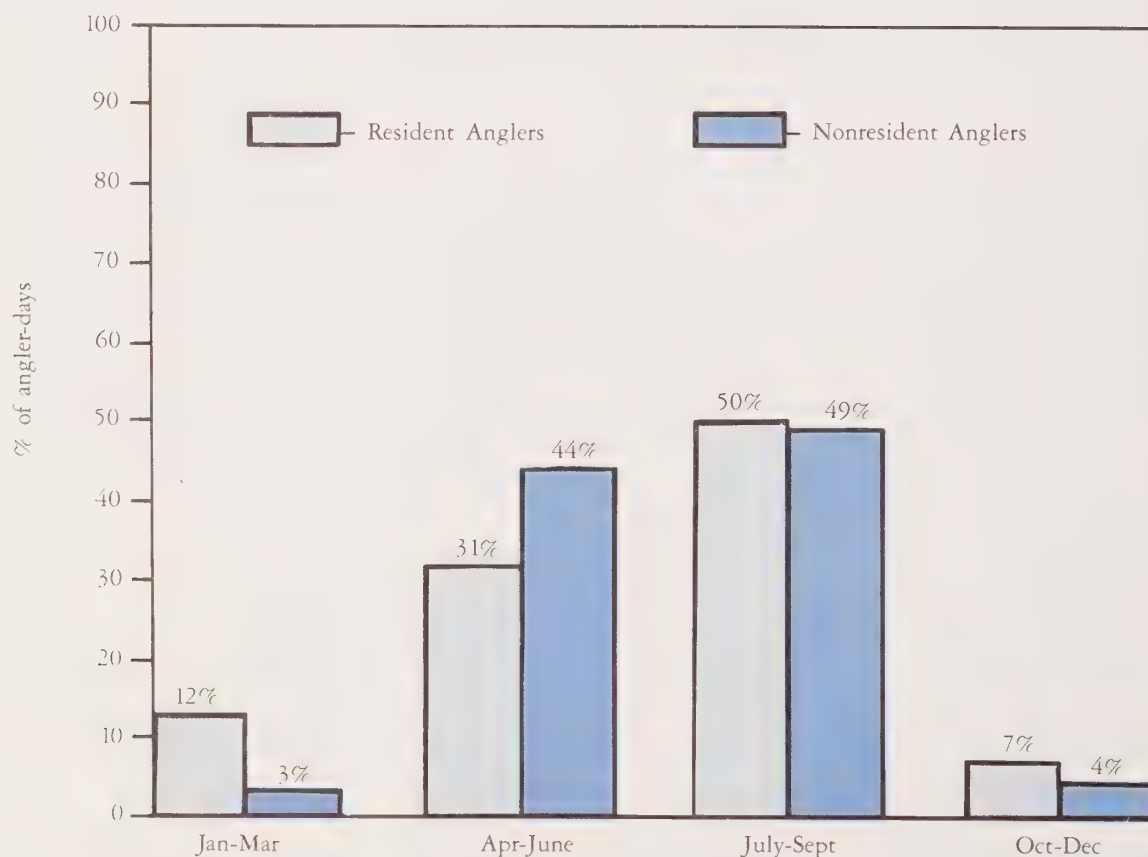


Fig. 4. Percentage of angler-days expended by anglers in each fishing area of Saskatchewan in 1985.

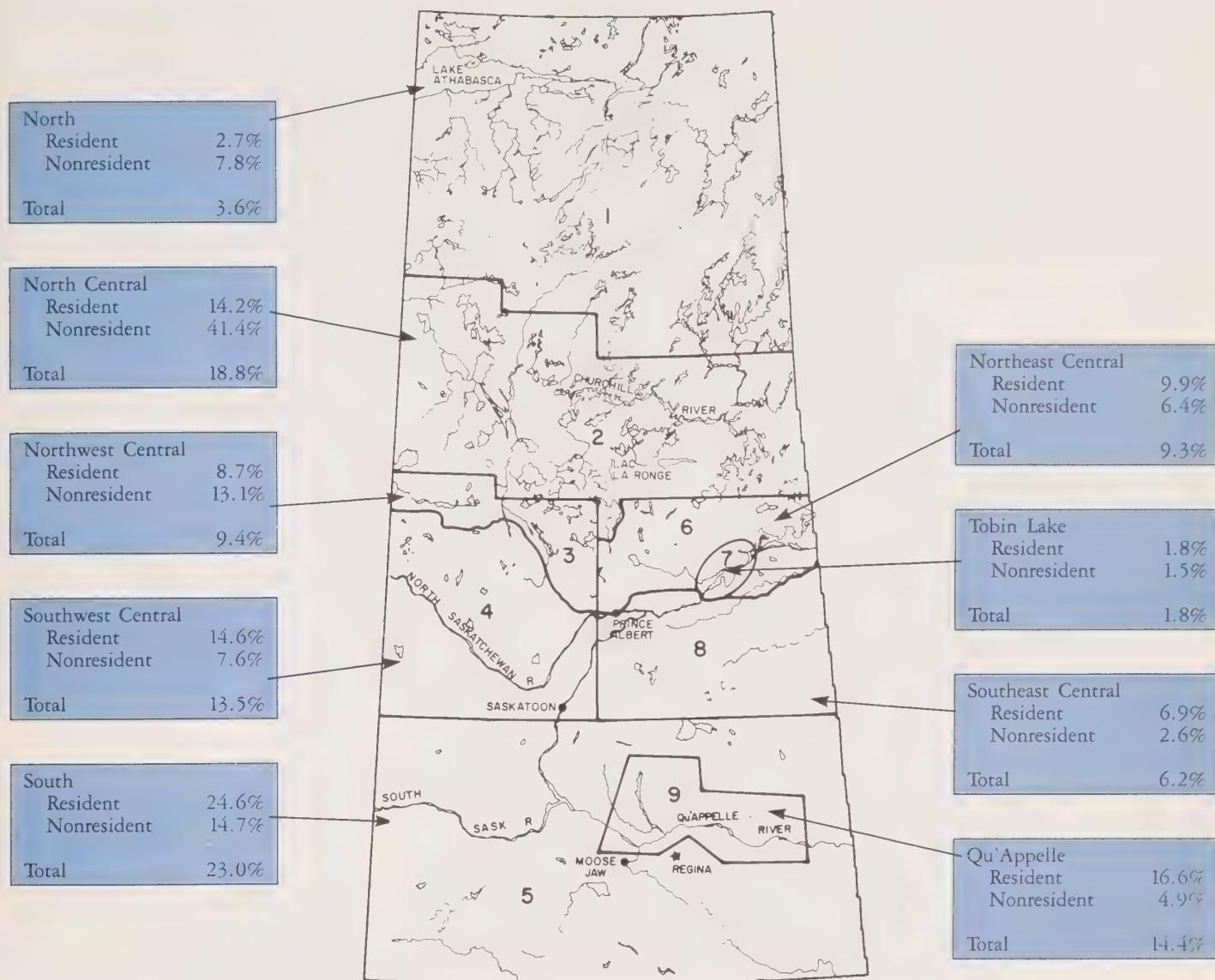


Table 15. Numbers of fish caught and retained by species in Saskatchewan in 1985.

Fish Species	Resident	Nonresident	Total
Northern Pike (<i>Esox lucius</i>)	1,473,656	262,032	1,735,688
Walleye (<i>Stizostedion vitreum</i>)	1,227,542	337,159	1,564,701
Perch (<i>Perca flavescens</i>)	995,838	74,344	1,070,182
Lake trout (<i>Salvelinus namaycush</i>)	108,732	58,396	167,128
Rainbow trout (<i>Salmo gairdneri</i>)	72,567	4,467	77,034
Brook trout (<i>Salvelinus fontinalis</i>)	13,125	2,423	15,548
Brown trout (<i>Salmo trutta</i>)	3,164	0	3,164
Splake	13,677	744	14,421
Kokanee salmon (<i>Oncorhynchus nerka</i>)	2,042	0	2,042
Lake whitefish (<i>Coregonus clupeaformis</i>)	45,049	4,179	49,228
Goldeye (<i>Hiodon alosoides</i>)	12,532	319	12,851
Grayling (<i>Thymallus arcticus</i>)	8,264	872	9,136
Others	41,911	4,925	46,836
Total numbers retained	4,018,099	749,860	4,767,959
Total weight retained (kg)	3,414,237	812,769	4,227,006

Fig. 5. Composition of recreational harvest, Saskatchewan in 1985.

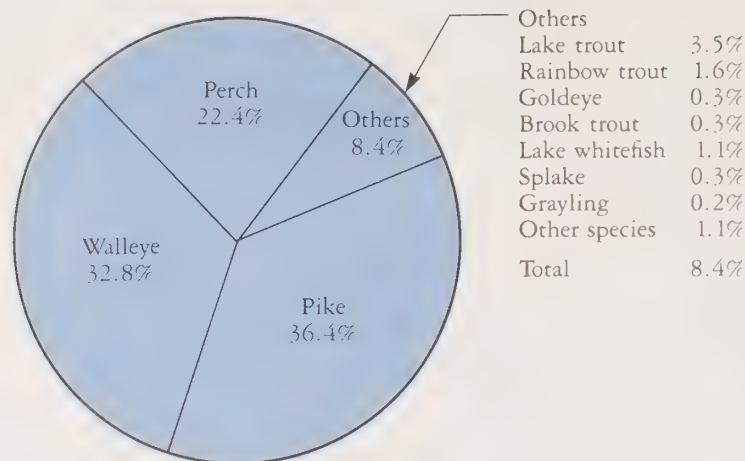


Table 16. Proportion of fish retained by anglers in Saskatchewan in 1985.

Species	Resident	Nonresident		Total
		Canadian	Other	
	%	%	%	%
Pike	61	39	17	49
Walleye	74	69	35	65
Perch	67	72	62	67
Lake trout	56	78	32	51
Rainbow trout	84	65	62	83
Brook trout	78	82	100	79
Brown trout	88	0	0	81
Splake	85	100	0	85
Kokanee	100	0	0	100
Whitefish	72	97	34	73
Goldeye	64	75	0	63
Grayling	74	100	7	42
Others	64	78	63	65
Total Species	66	56	26	58

Table 17. Comparison of sport fish harvests in Saskatchewan, 1975, 1980 and 1985.

Species	1975	1980	1985
	No.	No.	No.
Pike	2,209,436	1,922,890	1,735,688
Walleye	1,431,243	1,602,914	1,564,701
Perch	1,304,390	1,634,473	1,070,182
Lake trout	169,578	144,719	167,128
Rainbow trout	109,104	54,248	77,034
Brook trout	45,316	26,614	15,548
Brown trout	3,164
Splake	13,133	...	14,421
Kokanee	2,042
Whitefish	11,101	...	49,228
Goldeye	40,254	42,278	12,851
Grayling	63,725	8,546	9,136
Others	50,428	...	46,836
Total Species	5,447,708	5,436,682	4,767,959

trout and kokanee salmon) than the native/wild species.

The lower limits introduced in May 1985 by the Sport Fish Conservation Program appeared to be effective in reducing harvests. There were 750,000 fewer fish in 1985 than either 1975 or 1980 for species reported in each of the three years (Table 17). The major decreases were in perch and pike. The 1985 walleye harvest was larger than that in 1975 but less than that in 1980. More whitefish and splake were reported in 1985 than in 1975 and more lake trout were reported in 1985 than in 1980. More grayling were taken in 1985 than in 1980 but the harvests were much less than in 1975.

In 1985, anglers in Saskatchewan kept somewhat more than 26 fish, of which 10 were pike, 9 were walleye and 6 were perch. Residents preferred walleye, pike and perch (Table 18) but they retained, in decreasing order of quantity, pike, walleye and perch. Nonresident Canadians preferred and retained, in order of quantity, walleye and lake trout and retained, in decreasing order of quantity, walleye, pike and lake trout.

Expenditures and Investments

In 1985, anglers spent \$70.7 million in Saskatchewan on activities and supplies directly connected with their sport (Table 19). Residents

Table 18. Distribution of species preference indicated by anglers in Saskatchewan in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Walleye	42.2	39.8	41.7
Northern Pike	25.7	27.8	26.2
Perch	12.1	6.7	10.9
Lake trout	6.6	12.2	7.9
Rainbow trout	4.0	3.3	3.8
Other trout	7.3	7.6	7.3
Other Species	2.1	2.6	2.2
Total	100.0	100.0	100.0

spent a total of \$49.7 million, or an average of \$362 per angler. Nonresident Canadians spent \$6.9 million, or \$298 per angler, and other non-residents spent \$14.0 million, or \$749 per angler. Food, lodging and transportation accounted for 80% of the expenditures of resident anglers and 73% of the expenditures of non-resident Canadian anglers, but only 41% of the expenditures of non-

Table 19. Expenditures directly attributable to sport fishing in Saskatchewan in 1985.

Expenditure	Resident	Nonresident		Total
		Canadian	Other	
	\$	\$	\$	\$
Food and lodging	19,249,935	2,927,366	3,454,411	26,631,712
Transportation	20,662,957	2,105,931	2,357,224	25,126,112
Fishing Services	2,832,498	449,880	880,375	4,162,753
Fishing Supplies	3,084,478	227,816	357,469	3,669,763
Packages*	3,515,292	1,133,817	6,982,022	11,631,121
Other	406,371	69,039	8,442	483,852
Total	49,751,531	6,913,839	14,039,943	70,705,313
Average per active angler	361.64	298.63	749.28	393.99
Average per angler-day	30.76	38.29	94.95	36.33

*Packages include fly-in, lodge, charterboat, etc., costs.

Fig. 6. Proportion of expenditures attributable to sport fishing in Saskatchewan in 1985.

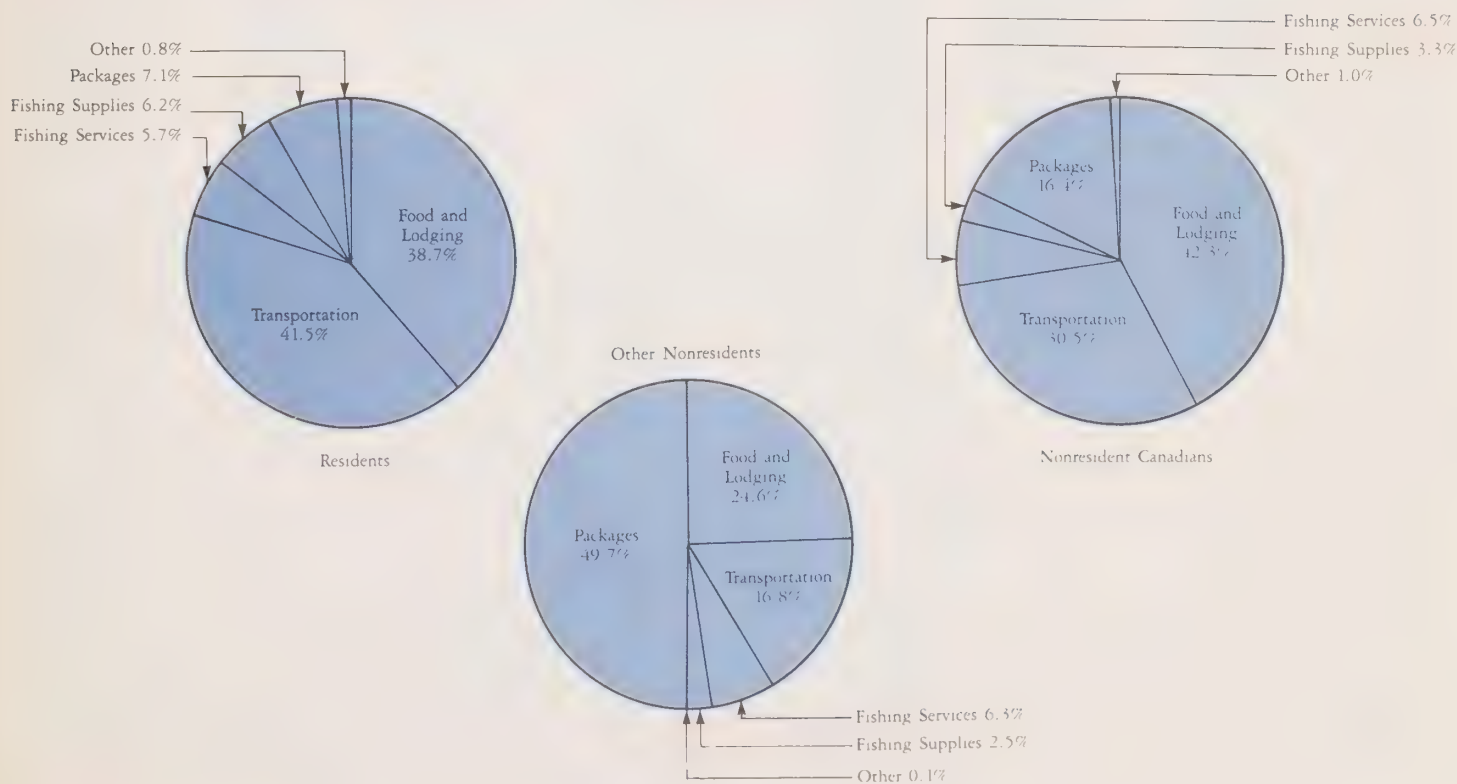
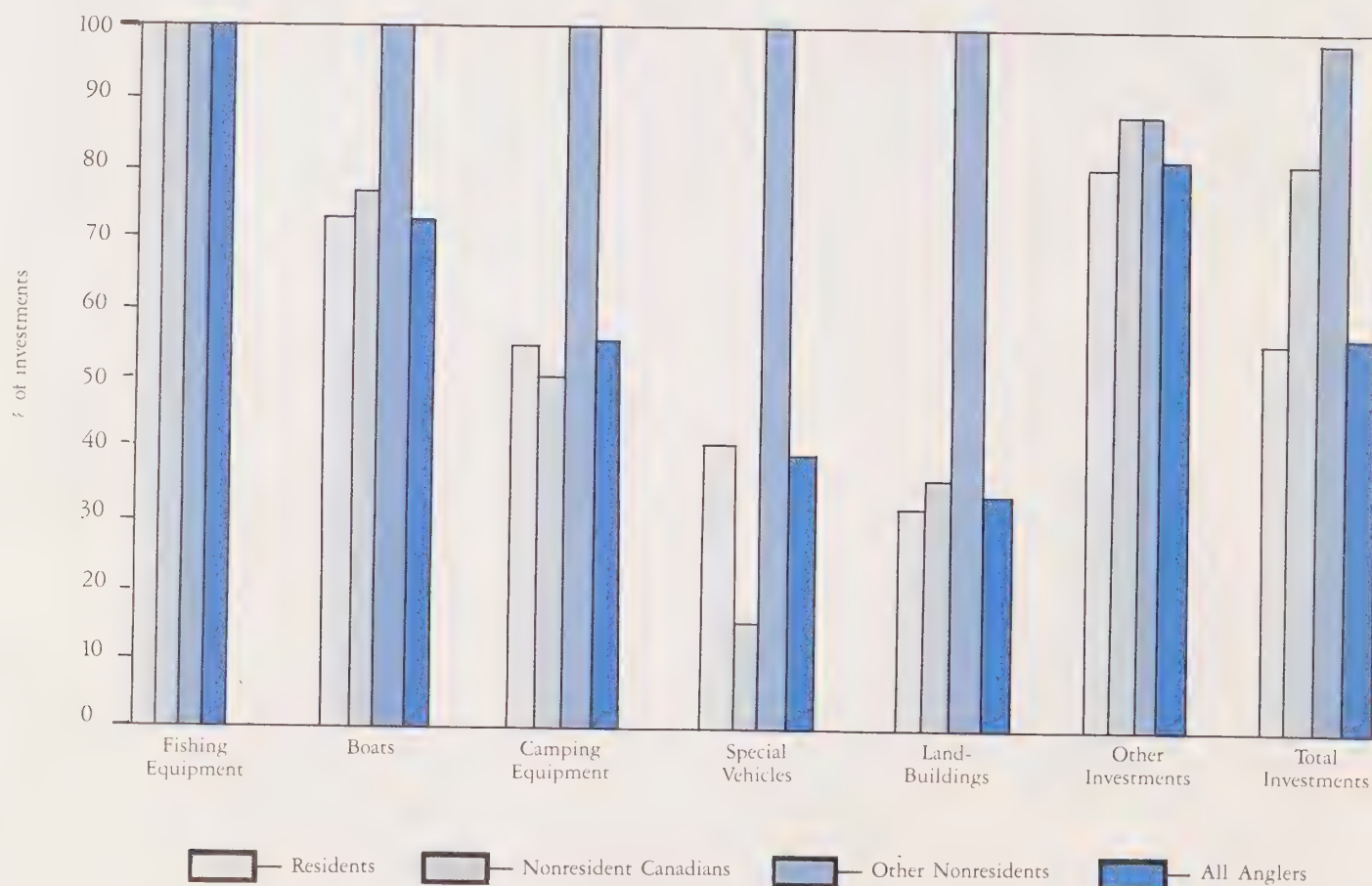


Table 20. Major purchases or investments relating in whole or in part to sport fishing in Saskatchewan in 1985.

Purchase	Resident	Nonresident		Total
		Canadian	Other	
	\$	\$	\$	\$
Fishing Equipment	7,370,564	313,095	93,444	7,777,103
Boats	40,377,281	2,281,525	214,544	42,873,350
Camping Equipment	33,494,689	625,915	17,763	34,138,367
Vehicles	27,833,416	85,062	7,151	27,925,629
Land and Buildings	37,591,502	338,476	314,321	38,244,299
Other	1,519,663	39,848	37,051	1,596,562
Total	148,187,115	3,683,921	684,274	152,555,310
Average per active angler	1,077.17	159.12	36.52	850.08
Total attributable to sport fishing	77,249,973	2,811,548	678,402	80,739,923
Average per active angler	561.53	121.44	36.20	449.90

Fig. 7. Proportion of purchases or investments made by anglers in Saskatchewan attributable to sport fishing in 1985.



Canadian nonresident anglers (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charterboats, accounted for 50% of the costs of the latter group.

Anglers in Saskatchewan invested \$152.5 million on major durables and property in 1985 (Table 20), of which \$80.7 million, or 53% was attributed to sport fishing activities

(Figure 7). The average investment of resident anglers was \$1077, non-resident Canadians \$159, and other nonresidents \$36. Ninety-seven percent of the investments were made

Table 21. Comparisons of expenditures, major purchases and investments relating in whole or in part to sport fishing in Saskatchewan, 1975, 1980 and 1985.

Expenditures	1975	1980	1985
	\$	\$	\$
Expenditures on sport fishing activities	35,127,216	41,881,141	70,705,313
Major purchases and investments	56,260,306	61,525,845	152,555,310
Total expenditures, purchases and investments	91,387,522	103,406,986	223,260,623
Purchases and investments attributable to angling	...	27,965,381	80,739,923
Expenditures, purchases and investments attributable to angling	...	69,846,522	151,445,236

by resident anglers. Saskatchewan residents, nonresident Canadians and other nonresidents indicated that 52%, 76% and 99%, respectively, of their purchases and investments were for sport fishing.

Overall, anglers spent a total of \$223.3 million on goods and services in 1985, of which \$151.4 million, or 68%, was directly attributable to sport fishing in Saskatchewan (Table 21). These figures represent an increase in 117% over similar expenditures in 1980. The increase is evidence both of a renewed level of investment in sport fishing and of the escalating costs of participating in this fishery.

Willingness to Pay

Active anglers were asked to indicate the additional daily costs at which they would have decided not to fish. The options they were given ranged from \$1.00 to \$100.00 per day. Twenty-six percent indicated they were not willing to pay any additional costs, 61% would have stopped fishing when their additional daily costs reached \$10, 77% would have stopped fishing when their additional daily costs reached \$20, 87% when they reached \$30, 90% when they reached \$40, 95% when they reached \$50, and all anglers would have stopped fishing

when their additional daily costs reached \$100 (Table 22). This means that, on the average, 26% of the anglers would have stopped fishing when their daily costs exceeded the 1985 daily average of \$36.33 and all anglers would have stopped when their daily costs became \$136.33. When extrapolating the results on an annual basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go sport fishing in Saskatchewan in 1985 was \$35.3 million.

Conclusions

The results of the 1985 survey of sport fishing in Saskatchewan confirm that it is an important component of the natural resource sector of the province. Three measures of that component are included in the results of the survey. First, anglers spent \$70.7 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Second, anglers invested \$152.6 million on major durables and property, of which \$80.7 million was used for sport fishing. In all, anglers invested a total of \$223.3 million in 1985, of which \$151.4 million was directly attributed to sport fishing in Saskatchewan. This is more than double similar expenditures in 1980 and indicates a renewed level of investment in sport fishing activities as well as escalating costs of participating in this fishery. The third mea-

Table 22. Willingness of active anglers to pay additional costs for fishing in Saskatchewan in 1985.

Additional cost per day	Resident	Non-resident	Total
	%	%	%
\$0.00	25.9	26.4	26.0
\$1.00	28.3	26.9	28.0
\$2.00	29.3	27.5	28.9
\$3.00	30.6	28.6	30.2
\$4.00	32.1	29.2	31.5
\$5.00	41.8	38.5	41.1
\$7.50	43.6	40.3	42.9
\$10.00	62.0	56.9	60.9
\$20.00	77.2	74.3	76.6
\$30.00	87.3	84.2	86.7
\$40.00	90.7	88.4	90.3
\$50.00	95.4	94.6	95.3
\$100.00	100.0	100.0	100.0
Additional annual amount ('000)	\$30,506.2	\$4,835.2	\$35,341.4

sure concerns fishing effort and harvests. Overall, there has been a slight decrease in the number of active adult anglers since 1975 as well as in the number of days fished. The total harvest decreased to 4.7 million fish primarily because of decreased harvests of perch and pike.

In conclusion the 1985 survey indicated that angling in Saskatchewan constituted a fishery of major proportions. More than 248,000 anglers fished, and of these more than 195,000 were residents of Saskatchewan. This means that one Saskatchewan resident in five fished in 1985. Anglers fished a total of 1.9 million

days, or about 11 days per person in 1985, and they harvested 4.7 million fish of all species weighing 4.2 million kilograms or 9.3 million pounds. In 1985, they spent \$70.7 million on activities directly associated with sport fishing and invested \$152.6 million on major durables and property used in whole or in part for sport fishing.



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Fisheries Branch
Saskatchewan Parks,
Recreation and Culture
Regina, Saskatchewan
S4S 5W6

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"Sport Fishing in Saskatchewan, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in Saskatchewan, 1985"
Fisheries Branch
Saskatchewan Parks,
Recreation and Culture
3211 Albert Street
Regina, Saskatchewan
S4S 5W6



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SPORT FISHING IN BRITISH COLUMBIA TIDAL WATERS, 1985

Introduction

Details about saltwater sport fishing in British Columbia in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the Statistics Division of the Federal Department of Fisheries and Oceans, Pacific Region, in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The surveys are part of a nationally coordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic information on the British Columbia tidal water sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery. Details of the province's freshwater sport fishery are provided in a separate bulletin.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters

of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at 5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport

fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Seventy-two percent (2,407) of the questionnaires sent to persons who had purchased angling licences to fish in British Columbia's tidal waters in 1985, were completed and returned to provide the basis for the information given in this report. (It should be noted that all estimates presented herewith apply to licensed adult anglers only, and therefore do not include children under 16 years of age who fished in the province). After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

British Columbia's 7000-km Pacific coastline, with its mountainous landscape and numerous inlets and islands, provides anglers with excellent saltwater sport fishing

opportunities. Among the various species of game fish that are available, the chinook salmon is the most important. It is sought by many anglers as a highly prized trophy fish. In addition to chinook, coho and pink salmon are the mainstay of British Columbia's tidal sport fishery. Sea-run cutthroat trout have a special appeal for a select number of anglers. Other species caught by anglers include rockfish, cod, perch and flatfish. Tidal waters also provide various shellfish and crustaceans, such as clams, oysters, crabs and prawns, to a small number of anglers.

Angler Profile

There were 332,888 adult anglers licensed for fishing in British Columbia's tidal waters in 1985, 72% (239,338) of whom were resi-

Table 1. Numbers and characteristics of saltwater anglers in British Columbia, 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a)				
– Adults	239,338	27,285	66,265	332,888
Active Adult Anglers				
– Males	167,242	22,589	50,764	240,595
(Average Age, Years)	44	44	51	46
– Females	45,786	4,549	13,949	64,284
(Average Age, Years)	43	48	48	44
Total	213,028	27,138	64,713	304,879
Children (b)	67,807	3,392	6,589	77,788
Total Active Anglers				
– All Ages	280,835	30,530	71,302	382,667

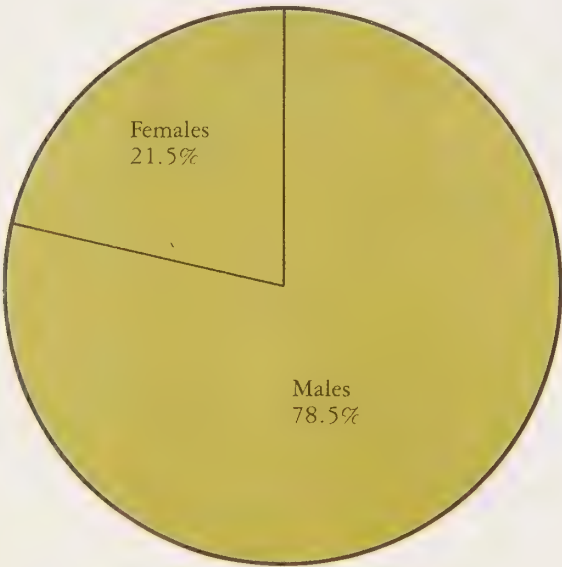
- (a) Individuals who purchased a angling licence to fish in British Columbia tidal waters. This group provides the basis for the statistical information presented in this bulletin.
- (b) Individuals under 16 years of age. This group is not represented in this bulletin. All estimates refer to adult anglers only.
- (c) Canadians who live in provinces/territories other than British Columbia and fished in British Columbia tidal waters in 1985.

dents of the province (Table 1). About 89% of the residents and 98% of the 93,550 nonresidents

were active anglers having fished in 1985. As well 77,788 children under the age of 16 living in licensed

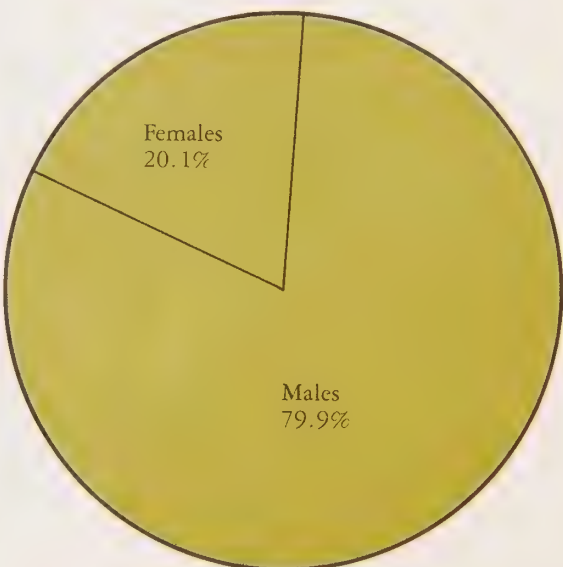
Fig. 1. Sex composition of active anglers.

(A) Resident



213,028 active anglers.

(B) Nonresident



91,851 active anglers.

anglers' households also fished, bringing the total population of active anglers in the province to 382,667. The impact on British Columbia's tidal water sport fishery by the large number of anglers under 16 years of age, who are not covered by this survey is probably considerable. Seventy-nine percent of the active resident adult anglers and 80% of the nonresidents were male (Figure 1). The average age of all adult anglers was 45 years.

Approximately 29% of the non-resident anglers in 1985 were Canadians. The majority (71%) of non-resident anglers were United States citizens who came for the most part, from the western coastal states of Washington, Oregon and California (Table 2 – Figure 2).

Table 2. Origin of nonresident licensed saltwater anglers in British Columbia in 1985.

Province-State Group	Number
Canadian Total	27,285
Non-Canadian	
New England, U.S.A.	277
Mid-Atlantic, U.S.A.	840
East North Central, U.S.A.	1,392
West North Central, U.S.A.	977
Mountain, U.S.A.	9,064
Pacific, U.S.A.	48,936
South Atlantic, U.S.A.	1,162
East South Central, U.S.A.	121
West South Central, U.S.A.	2,912
U.S.A. Other States	584
Non-Canadian Total	66,265
Grand Total	93,550

Fig. 2. Regional distribution of United States residents who held angling licences to fish in British Columbia tidal waters in 1985.



Fishing Effort

Angling was a major recreational activity in British Columbia's tidal waters in 1985. Anglers fished a total of about 3.3 million days in salt water in 1985 (Table 3). On the average, each angler spent 11 days fishing in 1985. Resident anglers fished an average of 13 days, while nonresidents spent an average of 5 days at their sport.

British Columbia's tidal water fishery was divided into four fishing regions. (Table 3). The South Georgia Strait region was by far the most heavily fished by resident and nonresident anglers alike who spent 78% and 49% respectively of their fishing time there (Figure 3).

Harvest

The recreational saltwater fishery of British Columbia is one of significant importance. In 1985, anglers caught an estimated 7.1 million fish of all species and retained 4.1 million of them (Table 4). These fish weighed approximately 7.9 million kilograms or 17.4 million pounds. Resident anglers caught 83% of the fish harvested (by number). Salmon were the most widely taken species, accounting for 54% of the harvest (by number), 79% of which were taken by resident anglers (Figure 4). Of the 14 fish retained on average, 7 were salmon, 3 were rockfish and 4 were other species. Chinook salmon, coho salmon, and other salmon, in order of priority, were the most sought after by both resident and nonresident anglers (Table 5).

Motivations

Seventy-six percent of the resident B.C. anglers and 33% of the nonresident anglers who were licensed to fish in tidal waters in 1985

Table 3. Saltwater angling effort (in angler-days) in British Columbia in 1985.

Region Fished	Resident	Nonresident	Total
South Georgia Strait	2,210,733	212,832	2,423,565
West Island	329,448	54,782	384,230
North Georgia Strait	186,562	123,934	310,496
North Central Coast	119,316	43,014	162,330
Total	2,846,059	434,562	3,280,621

Table 4. Numbers of fish caught and retained by species in British Columbia tidal waters, 1985.

Fish Species	Resident	Nonresident	Total
Salmon	1,766,394	467,262	2,233,656
Rockfish	701,342	125,905	827,247
Lingcod	340,764	68,440	409,204
Herring	299,294	10,099	309,393
Halibut	31,121	11,261	42,382
Dogfish	20,678	1,373	22,051
Other Species	280,541	25,513	306,054
Total Number Retained	2,390,354	389,624	4,149,987
Weight of Fish Retained (in lbs)	13,688,229	3,672,355	17,360,584

Table 5. Distribution of species preference indicated by saltwater anglers in British Columbia, 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Chinook Salmon	29.8	32.9	30.6
Coho Salmon	28.2	27.0	27.9
Other Salmon	16.3	20.1	17.4
Lingcod	9.6	6.8	8.8
Cod	5.5	1.5	4.4
Halibut	3.6	6.3	4.3
Rockfish	2.9	1.8	2.6
Trout	0.9	1.3	0.9
Red Snapper	1.1	0.3	0.9
Rock Cod	0.8	0.1	0.6
Other Species	1.3	1.9	1.6
Total	100.0	100.0	100.0

Fig. 3. Percentage of angler-days expended by anglers in each fishing area of British Columbia tidal waters, 1985.

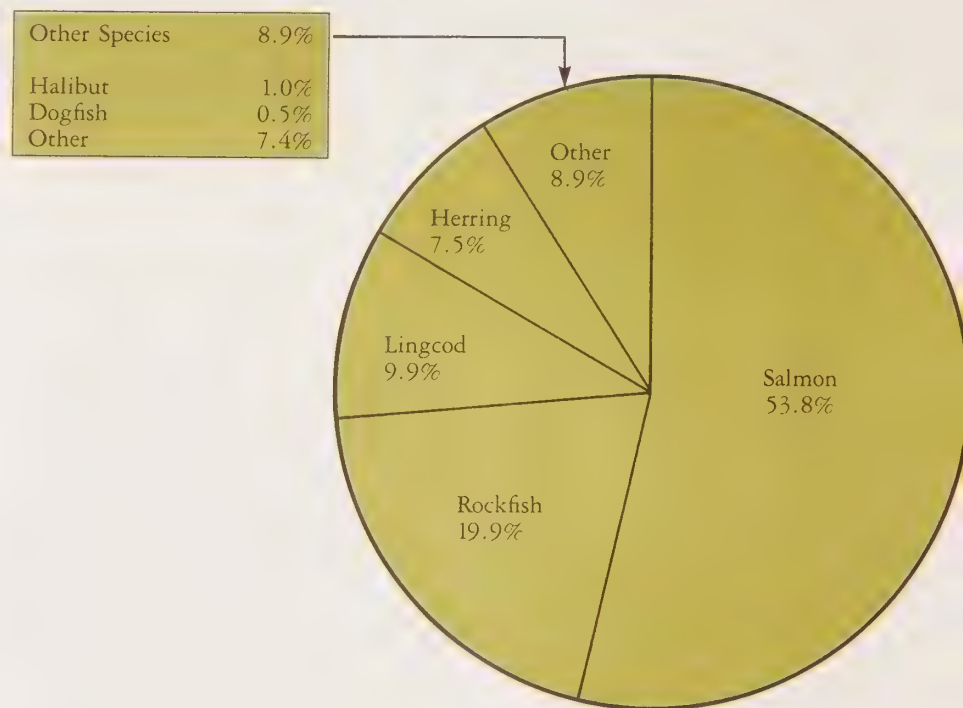


had also fished in the province in tidal waters in 1984 (Table 6). In addition, 55% of the resident and 16% of the nonresident anglers fished in B.C. tidal waters at the time of the previous survey 5 years ago. Twenty-six percent of the nonresident anglers indicated B.C. tidal waters were the only place they fished in 1985. Only 9,992 resident anglers (4% of licensed adult resident anglers) fished outside British Columbia tidal waters in 1985, chiefly in the United States and other countries and usually while on vacation, at the cottage, or on business (Table 7).

Nonresident anglers made 164,155 trips to B.C. tidal waters in 1985, or about two trips per angler of which 66% were for fishing (Table 8). On average, they fished on two-thirds of these trips. For 56% of their fishing trips, fishing was the main reason for visiting the province. Eighty-nine percent of their fishing trips to the province lasted more than a day (the average length of an overnight fishing trip was 9 nights). Approximately 22% of the time they stayed with friends and relatives, 17% of the time they camped in commercial campgrounds and 16% of the time they used other commercial accommodation.

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in B.C. tidal waters. The natural

Fig. 4 Proportion of fish (by number) retained by active licensed saltwater anglers in British Columbia, 1985.



beauty of the province, the quality of the water, favourable weather conditions, and access to wilderness areas, were important components of the environment. Other important factors were the ability to escape

from work or household routine, the number and size of fish caught, privacy from other fishing parties and success in catching the desired species. Anglers ascribed little importance to angling for wild (as opposed to hatchery) fish or to catching fish for food. (Table 9).

Table 6. Fishing activity in British Columbia tidal waters during the last five years (based on angler population in 1985).

Year of Activity	Resident %	Non-resident %	All Anglers %
1980	55.0	15.6	43.9
1981	58.7	16.5	46.8
1982	63.0	19.2	50.7
1983	69.7	25.3	57.2
1984	76.2	32.5	63.9

Table 7. Reasons given by resident saltwater anglers for fishing outside the province in 1985.

Reasons	Number	%
Species not Available	1,237	12.4
On Vacation, Business etc.	6,081	60.8
Other Reasons	2,674	26.8
Total	9,992	100.0

Residents of British Columbia also enjoyed many wildlife related activities in the province in 1985 (Table 10). Hunting was of particular interest to many of these resident anglers as 15% were actively involved in hunting big game, 7% hunted small game and 9% hunted wild birds. Nature photography, bird watching and feeding wildlife were another favorite pastime for 35%, 30% and 26% of these anglers respectively.

Table 8. Trip characteristics of nonresident saltwater anglers in British Columbia in 1985.

Characteristics	Number
Trips to British Columbia – All Reasons	164,155
Fishing Trips to British Columbia	109,146
– %	66
Days Spent For All Reasons	1,228,478
Days Fished	434,562
– %	35
Fishing Trips – Main Reason for Visit	61,512
– Secondary Reason	33,491
– Decided Upon After Arrival	14,143
Day Trips for Fishing	11,727
Overnight Trips for Fishing	97,419
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	22.1
Tent or Trailer	8.3
Cottages	7.3
Camping in Provincial Parks	2.5
Camping on Crown Land	0.5
Camping in Commercial Camp Grounds	17.3
Fishing Lodge or Camps	12.0
Commercial Accommodation	16.1
Other Accommodation	13.9
Total Nights Spent on Fishing Trips	925,412

Overall, 32,954 or 13.8% of licensed adult anglers indicated membership in at least one national or provincial wildlife organization or local fish and game club (Table 11). Six percent indicated membership in the B.C. Wildlife Federation, 2% indicated membership in the Cana-

dian Wildlife Federation, and 10% indicated membership in a private club or association.

Approximately 92% of active nonresident anglers indicated they would return to B.C. to fish in tidal waters in the future, although when asked about their activities if salt-

water sport fishing was no longer available, 43% said they would have substituted other activities, 14% would have stayed a shorter time and 41% would not have come to the province at all. (Tables 12 and 13).

Table 10. Wildlife related activities of British Columbia's resident saltwater anglers in 1985.

Activity	%
Hunting – 1. Big Game	15.4
2. Small Game	6.6
3. Wildlife Birds	8.8
4. Nature Photography	35.1
5. Bird Watching	29.5
6. Feeding Wildlife	26.1

Table 11. Membership organization of British Columbia's resident licensed saltwater anglers in 1985.

Organization	% of Anglers
B.C. Wildlife Fed.	6.0
Canadian Wildlife Fed.	2.3
Private Club or Assoc.	9.7
Membership in any club/association	13.8

Table 9. Relative importance of factors affecting saltwater fishing enjoyment in British Columbia in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Beauty of Surroundings	14.6	14.1	14.5
2. Quality of Water	14.5	12.4	13.9
3. Weather Conditions	14.0	11.3	13.2
4. Escape Routine	11.5	11.8	11.6
5. Access to Wilderness	9.7	8.1	9.2
6. Number of Fish Caught	6.3	9.0	7.1
7. Privacy	6.9	7.3	7.0
8. Catch Species Desired	6.5	8.2	7.0
9. Size of Fish Caught	6.1	7.8	6.6
10. Angling for Wild Fish	4.8	6.5	5.3
11. Catch as a Source of Food	5.0	3.5	4.6

Overall, 70% of active nonresident anglers rated the quality of fishing in B.C. tidal waters as good to excellent; 15% rated fishing as fair and the remaining 15% rated the quality as poor, or had no opinion (Table 14).

Table 12. Projected future fishing participation of active nonresident saltwater anglers in British Columbia.

Return	No.	%
Yes	84,465	92.0
No	4,185	5.0
No Opinion	3,200	3.0
Total	91,850	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in British Columbia tidal waters in 1985.

Activity	No.	%
Stay Shorter Time	12,543	14.0
Substitute Other Activities	39,795	43.0
Not Come at All	37,953	41.0
No Opinion	1,559	2.0
Total	91,850	100.0

Table 14. Attitude of active nonresident anglers on the quality of fishing in British Columbia tidal waters in 1985.

Rating	No.	%
Excellent	15,731	17.0
Very Good	24,245	26.0
Good	25,101	27.0
Fair	13,453	15.0
Poor	10,065	11.0
No Opinion	3,255	4.0
Total	91,850	100.0

Expenditures and Investments

In 1985, anglers spent \$237.6 million in B.C. on activities and supplies connected with saltwater sport fishing (Table 15). Residents spent a total of \$164.4 million, or an average of \$772 per active angler. Nonresidents spent \$73.1 million, or \$796 per active angler. Food, lodging and transportation accounted for 88% of the expenditures of resident anglers and 54% of the expenditures of nonresident anglers. (Figure 5). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 35% of the nonresident expenditures.

Anglers in B.C. invested \$302.2 million on major durables and property in 1985 (Table 16), of which

\$164.6 million, or 54% was attributed to sport fishing activities in tidal waters (Figure 6). The average investment of active resident anglers was \$1,344 and the average investment of active nonresidents was \$173. Ninety-five percent of the investments were made by resident anglers. British Columbia residents and nonresidents indicated that 53% and 75% respectively, of their purchases and investments were for sport fishing in tidal waters.

Overall, anglers spent a total of \$539.8 million on goods and services in 1985, of which \$402.2 million, or 75% was directly attributable to sport fishing in British Columbia tidal waters.

Table 15. Expenditures directly attributable to saltwater sport fishing in British Columbia, 1985.

Expenditures	Resident \$	Nonresident \$	Total \$
Food and Lodging	36,803,082	21,694,012	58,497,094
Transportation	107,084,337	17,758,461	124,842,798
Fishing Services	4,198,873	6,444,168	10,643,041
Fishing Gear	9,694,848	1,712,849	11,407,697
Packages	5,911,440	25,288,326	31,199,766
Other	734,010	227,945	961,955
Total	164,426,590	73,125,761	237,552,351
Average Per Active Angler	772.00	796.14	779.17
Average Per Angler-day	57.41	168.27	72.41

Table 16. Major purchases or investments relating in whole or in part to saltwater sport fishing in British Columbia, 1985.

Expenditures	Resident \$	Nonresident \$	Total \$
Fishing Equipment	15,232,300	1,065,137	16,297,437
Boats and Related Equipment	129,185,037	3,197,908	132,382,945
Camping Equipment	24,795,107	104,981	24,900,088
Special Vehicles (ATV's etc)	74,179,005	285,808	74,464,813
Land-Buildings	37,979,308	10,832,625	48,811,933
Other	4,981,207	396,406	5,377,613
Total	286,351,964	15,882,865	302,234,829
Average Per Active Angler	1,344.20	172.92	991.33
Total Attributable to Sport fishing	152,692,711	11,947,263	164,639,974
Average Per Active Angler	716.77	130.07	540.02

Fig. 5. Proportion of expenditures attributable to saltwater sport fishing in British Columbia, 1985.

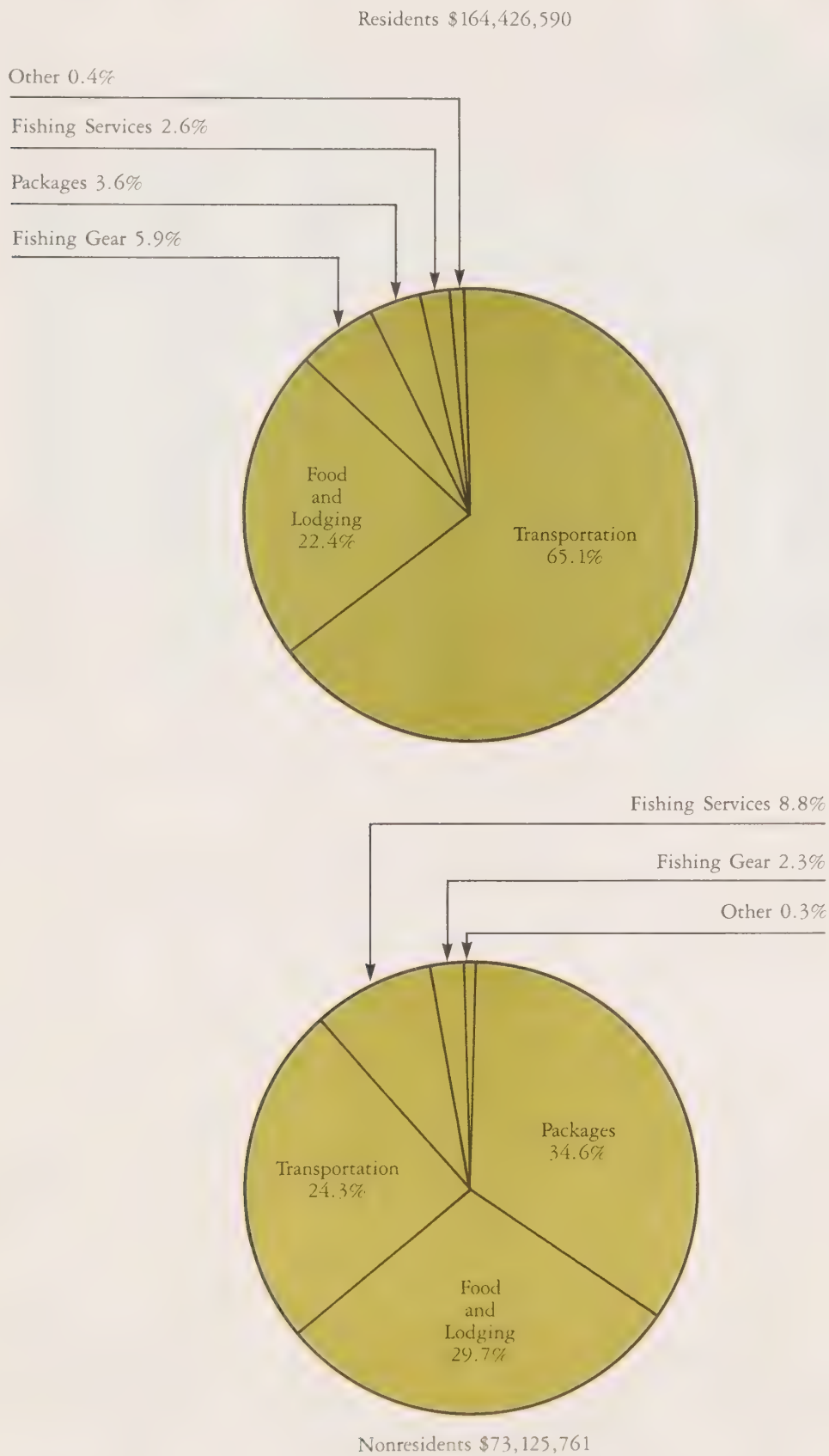
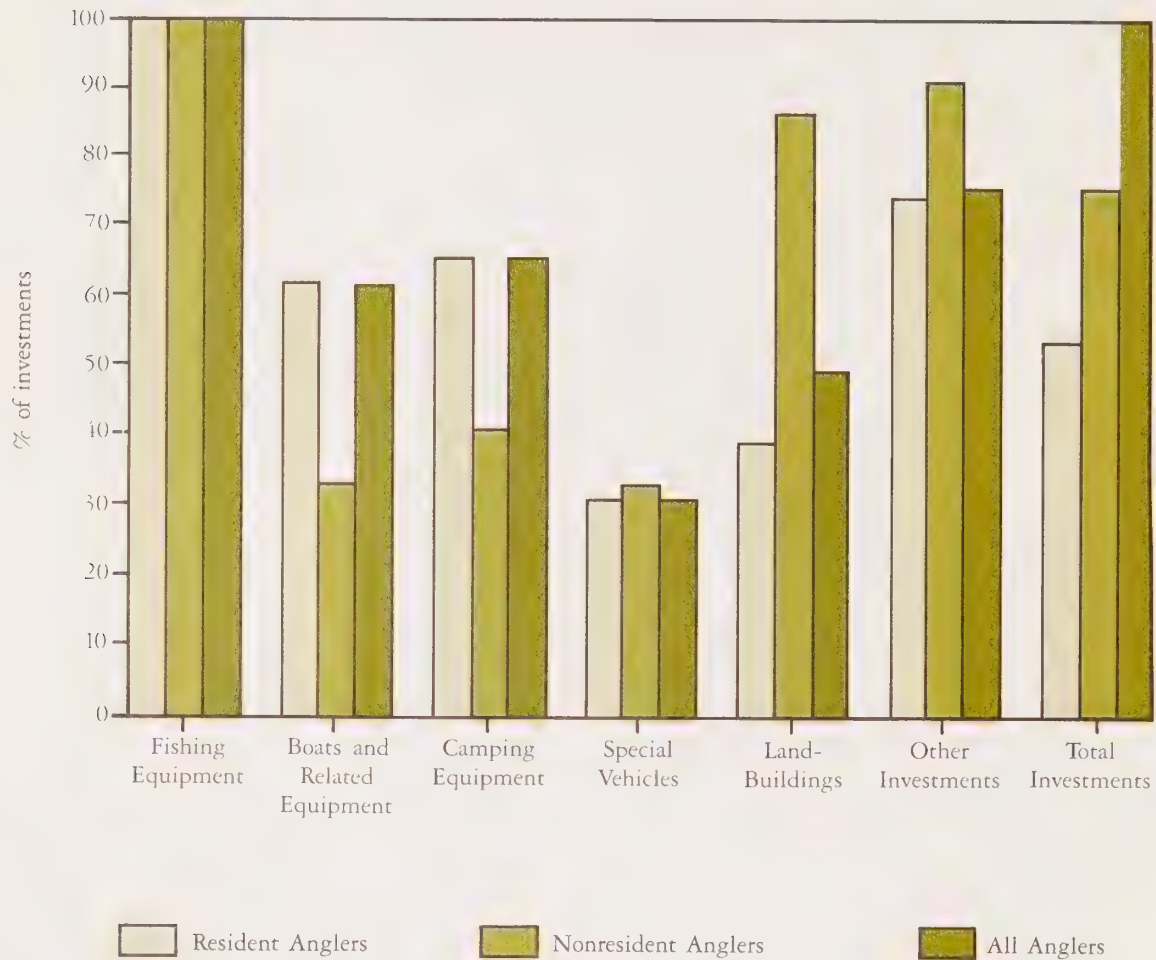


Fig. 6. Proportion of purchases or investments made by anglers in British Columbia in 1985 attributable to saltwater sport fishing.



Willingness to Pay

“Willingness to pay” is a method used by economists to estimate the value people place on experiences such as outdoor recreation, scenic beauty or other unpriced amenities of life in this province, over and above the actual costs incurred to enjoy them.

Active resident anglers were asked, “If your saltwater fishing costs

had been higher in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?”

Choices were given between \$1.00 and \$100.00 per day, and an additional choice of more than \$100.00 per day was given where anglers were asked to specify the actual additional \$ amount they were willing to spend. Twenty-seven percent indi-

cated they would not have been willing to pay any additional costs. The remaining seventy-three percent indicated a total “willingness to pay” of \$48.6 million.

This represents the net economic value of saltwater sport fishing to residents of the province. The net income to British Columbia from nonresident expenditures in the province is being calculated to deter-

mine the total net economic value of tidal water sport fishing.

Conclusion

The results of the 1985 survey of sport fishing in British Columbia's tidal waters confirm that it is an important socio-economic component of the natural resource sector in the province, and a significant form of outdoor recreation. It is estimated anglers spent \$237.6 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$302.2 million on major durables and property, of which \$164.6 million was used for sport fishing in tidal waters. In all, anglers invested a total of \$539.8 million in 1985, of which \$402.2 million was directly attributed to sport fishing in British Columbia tidal waters.

Economists generally agree that the first round of expenditures in

most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact on sport fishing within British Columbia tidal waters was \$603.3 million or greater in 1985.

Resident anglers also indicated they valued their sport fishing experiences at \$48.6 million in total above their current costs in 1985. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 304,879 adults fished for sport in British Columbia tidal waters in 1985. More than 213,028 of these active adult anglers were residents of the province. Based on the population estimate of 2.3 million* individuals 16 years of age and over, approximately one resident angler in

11 fished in B.C. tidal waters in 1985. Anglers fished a total of 3.3 million days in 1985, and they harvested 4.1 million fish of all species. These fish weighed 7.9 million kilograms or 17.4 million pounds.

In summary, the average British Columbia angler who fished in tidal waters in 1985 was 45 years old, strongly preferred to fish for salmon and felt that natural beauty of surroundings and water quality were the most important factors influencing a day's fishing. This average angler fished 13 days while spending \$1,319 and catching 23 fish. Fourteen of these fish, weighing a total of 57 pounds (25.9 kilograms) were kept.

* Statistics Canada – Postcensal Annual Estimates of Population, June 1985 – Volume 3.

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Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in British Columbia Tidal Waters, 1985"
Statistics Division, Fisheries Branch
Pacific Region
Department of Fisheries and Oceans
555 West Hastings Street
Vancouver, British Columbia
V6E 2P1

Bella Coola, B.C.



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Economic and Commercial
Analysis Directorate
Department of Fisheries
and Oceans
Ottawa, Ontario
K1A 0E6

Statistics Division
Fisheries Branch
Pacific Region
Department of Fisheries
and Oceans
Vancouver, British Columbia
V6E 2P1

SPORT FISHING IN THE YUKON, 1985

Introduction

Details about sport fishing in the Yukon in 1985 were obtained to evaluate the importance of this fishery to the public, anglers, the sport fishing industry and fisheries management agencies. The survey was conducted in 1986 by the territorial Fish and Wildlife Branch of the Department of Renewable Resources in co-operation with the Surveys Unit, Economic and Commercial Analysis Directorate of Canada's Department of Fisheries and Oceans, Ottawa.

The 1985 survey was the third in a series carried out at five year intervals. The first was reported in a publication entitled, "1975 Survey of Sportfishing in the Yukon Territory" and subsequently the second was reported in the "1980 Survey of Sportfishing in the Yukon". The surveys are part of a nationally co-ordinated study conducted by Canada's federal, provincial and territorial fisheries agencies. Thus not only does this report provide basic information on the Yukon sport fishery in 1985, it also makes an important contribution to an understanding of Canada's sport fishery.

Survey Background

In 1970, representatives of Canadian fisheries agencies began to meet periodically to discuss matters of common concern. At these meetings, known as the Canadian Sport Fisheries Conferences, it was realized that effective management required a national framework of basic information regarding the size, value, socioeconomic performance and potential of Canada's sport fisheries. The size of this task was realized at the outset; no comprehensive information existed, and partial coverage from the only previous survey, conducted in 1961, indicated that millions of Canadians and hundreds of millions of dollars were involved.

It was also realized that sport fishing data were required regularly, and that all fisheries agencies must work together to provide such information. Plans made at the 1972 and 1974 conferences were implemented in January 1976 when the provincial, territorial and federal fisheries agencies launched the first nationally coordinated set of surveys. The success of the 1975 survey led to a second survey in 1980 and the commitment to continue the surveys at

5-year intervals.

These studies have been successful in two important ways. First, they provided Canadians with the first authoritative data on the magnitude and importance of Canada's sport fisheries. Second, they demonstrated that, despite regional differences, consistent and comparable data can be generated from a common group of questions administered throughout Canada.

Forty-nine percent (585) of the questionnaires sent to persons who had purchased angling licences in the Yukon in 1985 were completed and returned to provide the basis for the information given in this report. After extrapolating information from these returns, gathering information on known licence numbers, comparing estimates and holding discussions with fisheries management personnel, an overall description of sport fishing in the province was developed.

The Resource Base

There are 40 species of fish in the Yukon, of which 9 are of principal interest to anglers. The main

species taken are Arctic grayling, lake trout and northern pike. Rainbow trout, whitefish, Arctic char and three species of salmon are also actively pursued by anglers. The Yukon is the only jurisdiction in Canada where it is possible to catch sockeye salmon in the freshwater sport fishery. Lake trout is the species preferred by most resident anglers, while nonresidents favour Arctic grayling.

Although seventy percent of lake surfaces in the Yukon are accessible by road, sport fishing takes place on fewer than 300 lakes, only a third of which are accessible either by road or four-wheel-drive. Most of the Yukon's rivers and streams are inaccessible by road. However, a successful pothole lake stocking program is providing anglers with the opportunity to fish for rainbow trout near their communities.

Freshwater fish grow very slowly in northern waters. As a result, the Yukon fishery is extremely sensitive to increases in the angling effort and harvest. Quotas on the harvest and stringent limits on the taking of trophy fish have been introduced to protect the fish resource from overexploitation.

Table 1. Numbers and characteristics of anglers in the Yukon in 1985.

	Resident	Nonresident		Total
		Canadian (c)	Other	
Total Licensed Angling Population (a)				
– Adults	6,862	3,865	4,484	15,211
Active Adult Anglers				
– Males	3,920	2,760	3,182	9,862
(Average Age, Years)	39	44	50	43
– Females	1,606	431	759	2,796
(Average Age, Years)	37	43	49	41
Total	5,526	3,191	3,941	12,658
Children (b)	1,905	663	727	3,295
Total Active Anglers				
– All Ages	7,431	3,854	4,668	15,953

(a) Individuals who purchased an angling licence in the Yukon. This group provides the basis for the statistical information in this bulletin.

(b) Individuals under 16 years of age.

(c) Canadians who live in provinces/territories other than the Yukon and who fished in the Yukon in 1985.

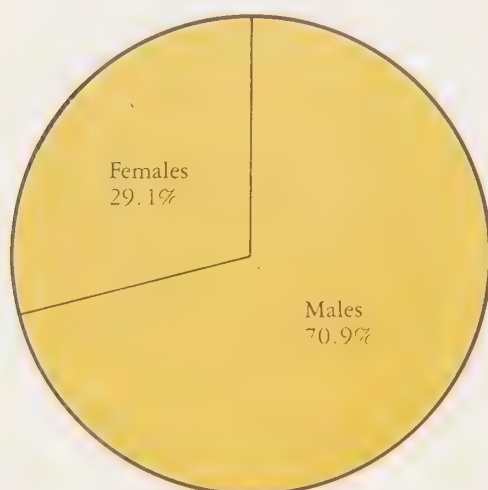
Angler Profile

There were 15,211 licensed adult anglers in the Yukon in 1985, 45% (6,862) of whom were residents of the province (Table 1). About 81% of the residents and 85% of the 8,349 nonresidents were active anglers having fished in 1985. As well 3,295 children under the age of 16 living in licensed anglers' households also fished, bringing the total

population of active anglers in the territory to 15,953. The impact on the Yukon's sport fishery of the large number of anglers under 16 years of age, who are not covered by this survey is probably considerable. Seventy-one percent of the active resident adult anglers and 83% of the nonresidents were male (Figure 1). The average age of all anglers was 42 years.

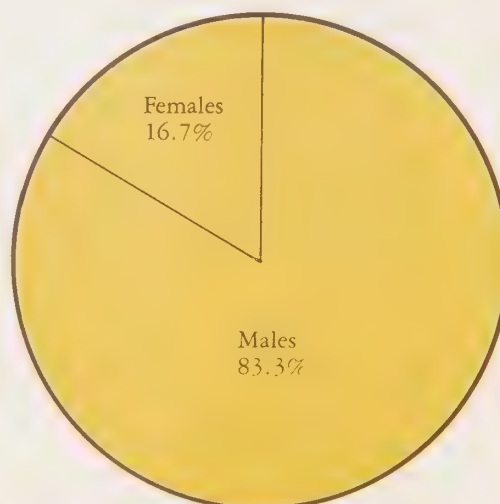
Fig. 1. Sex composition of active anglers.

(A) Resident



5,526 active anglers.

(B) Nonresident



7,132 active anglers.

Approximately 46% of the non-resident anglers in 1985 were Canadians, mainly from Alberta and British Columbia. Most of the remaining nonresident anglers were United States citizens who came for the most part, from the Pacific States (Table 2 – Figure 2).

Fishing Effort

Anglers in the Yukon fished a total of 123,303 days in 1985 (Table 3). On the average, each angler spent 10 days fishing in 1985. Resident anglers fished an average of 15.8 days, while nonresidents spent an average of 5.1 days at their sport.

Most fishing (95%) occurred during the period April through September (Figure 3). During that time 93% of resident, 97% of non-resident Canadian and 100% of other nonresident fishing effort was expended. About 62% of all effort

Table 2. Origin of nonresident licensed anglers in the Yukon in 1985.

Province-State Group	Number
Canadian	
New Brunswick	13
Quebec	84
Ontario	442
Manitoba	118
Saskatchewan	154
Alberta	1,628
British Columbia	1,373
Canadian Total	3,865
Non-Canadian	
New England, U.S.A.	99
Mid-Atlantic, U.S.A.	193
East North Central, U.S.A.	290
West North Central, U.S.A.	460
Mountain, U.S.A.	622
Pacific, U.S.A.	1,090
South Atlantic, U.S.A.	279
East South Central, U.S.A.	190
West South Central, U.S.A.	410
U.S.A. – Other States	653
Other Countries	198
Non-Canadian Total	4,484
Grand Total	8,349

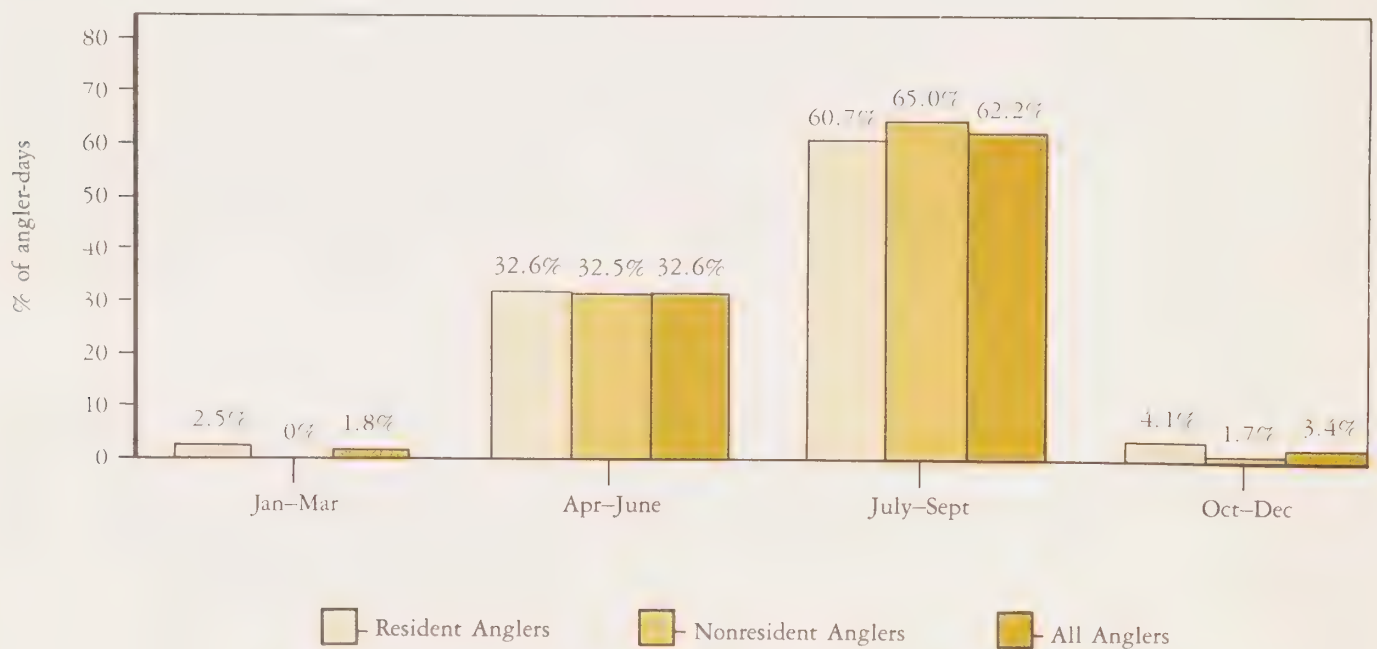
Fig. 2. Regional distribution of United States residents who held Yukon angling licences in 1985.



Table 3. Angling effort (in angler-days) by season in the Yukon in 1985.

Season	Resident	Nonresident	Total
January – March	2,198	— —	2,198
April – June	28,448	11,729	40,177
July – September	52,975	23,749	76,724
October – December	3,590	614	4,204
Total	87,211	36,092	123,303

Fig. 3. Angling effort by season in the Yukon in 1985.



occurred during the summer months July, August, and September.

For the purposes of analysis, the Yukon's sport fishery was divided into 7 regions (Figure 4). Resident anglers showed a decided preference for the South Central region (which is also the area that contains most of the resident population), where they spent over a third of their fishing time. Another third of their time was divided between the Central and

South West regions. For their part, nonresidents favoured the South Central, South West and South East regions. Overall, a third of the year's sport fishing activity took place in the South Central region.

Harvest

In 1985, anglers in the Yukon caught an estimated 231,963 fish of all species and retained 108,712 of

them (Table 4). These fish weighed approximately 307,350 pounds or (139,387 kilograms). Resident anglers caught 65% of the fish harvested (by number). Arctic grayling and lake trout were the most widely taken species, with Arctic grayling alone accounting for 49% of the harvest by number (Figure 5). Of the 9 fish retained on average, 4 were grayling, 3 were lake trout, 1 was a pike and 1 was "other" species.

Fig. 4. Percentage of angler-days expended by anglers in each fishing area of the Yukon in 1985.

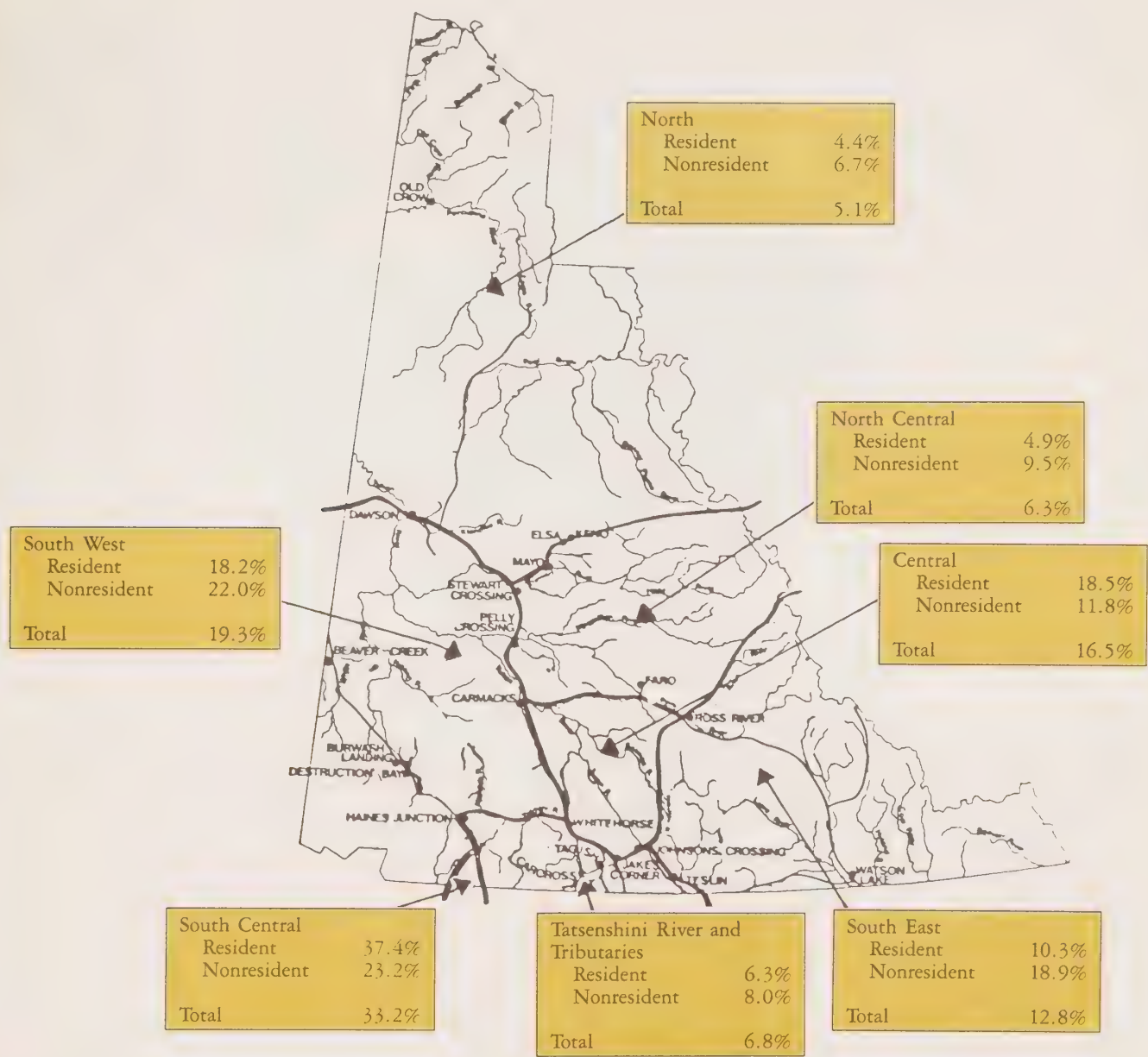


Table 4. Numbers of fish caught and retained by species in the Yukon in 1985.

Fish Species	Resident	Nonresident	Total
Arctic grayling	30,348	22,918	53,266
Lake trout	26,422	8,030	34,452
Northern pike	6,289	3,711	10,000
Rainbow trout	4,432	1,779	6,211
Whitefish	908	559	1,467
Coho salmon	53	39	92
Sockeye salmon	583	71	654
Chinook salmon	590	323	913
Char	131	185	316
Other species	1,016	325	1,341
Total Number Retained	70,772	37,940	108,712
Weight of Fish Retained (in lbs)	215,337	92,013	307,350

Fig. 5 Proportion of fish (by number) retained by active licensed anglers in the Yukon in 1985.

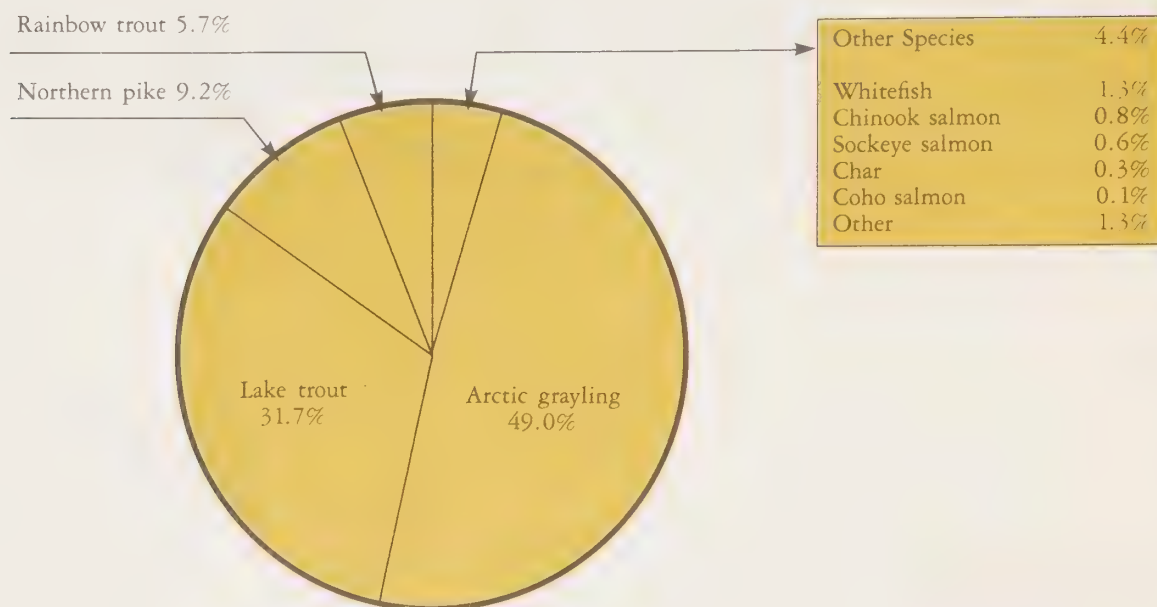


Table 5. Distribution of species preference indicated by anglers in the Yukon in 1985.

Species	Resident	Nonresident	All Anglers
	%	%	%
Arctic grayling	24.1	25.1	24.6
Lake trout	28.0	20.8	24.2
Rainbow trout	11.8	14.7	13.3
Other trout	12.9	8.7	10.7
Salmon-general	11.6	12.0	11.8
Northern pike	5.5	8.0	6.8
Chinook salmon	1.2	4.0	2.7
Arctic char	1.4	3.4	2.5
Sockeye salmon	1.1	2.0	1.6
Lake whitefish	1.9	0.8	1.3
Other species	0.5	0.5	0.5
Total	100.0	100.0	100.0

Arctic grayling, lake trout and rainbow trout were the species most sought after by resident and nonresident anglers (Table 5).

Table 6. Fishing activity in the Yukon during the last five years (based on angler population in 1985).

Year of Activity	Resident	Nonresident	All Anglers
	%	%	%
1980	57.6	7.4	30.0
1981	59.9	8.7	31.8
1982	67.8	7.6	41.9
1983	72.8	10.6	58.1
1984	78.5	10.6	58.1

Seventy-nine percent of the Yukon residents and 11% of the nonresidents, who held Yukon sport fishing licences in 1985, had also fished in the territory in 1984 (Table 6). In addition, 58% of the resident and

Table 7. Reasons for residents of the Yukon fishing outside the territory in 1985.

Reasons	Number	%
Species Not Available	623	29.1
On Vacation, Business, etc.	1,008	47.0
Other Reasons	511	23.9
Total	2,142	100.0

Table 8. Trip characteristics of nonresident anglers in the Yukon in 1985.

Characteristics	Number
Trips to the Yukon – All Reasons	13,500
Fishing Trips to the Yukon	9,128
– %	68
Days Spent For All Reasons	113,089
Days Fished	36,092
– %	32
Fishing Trips – Main Reason for Visit	1,947
– Secondary Reason	5,395
– Decided Upon After Arrival	1,786
Day Trips for Fishing	158
Overnight Trips for Fishing	8,970
Accommodation Used on Overnight Trips (% of nights)	
Friends and Relatives	18.5
Tent or Trailer	28.3
Cottages	0.1
Camping in Territorial Parks	19.6
Camping on Crown Land	6.1
Camping in Commercial Camp Grounds	6.0
Fishing Lodge or Camps	2.8
Commercial Accommodation	4.4
Other Accommodation	14.2
Total Nights Spent on Fishing Trips	75,159

7% of the nonresident anglers fished in the Yukon at the time of the previous survey 5 years ago. Approximately 13% of the nonresident anglers indicated the Yukon was the only place they fished in 1985. Only 2,142 resident anglers (32% of licensed adult resident anglers) fished outside the territory in 1985 chiefly in Alaska and British Columbia and usually while on vacation, at the cottage or on business (Table 7).

Nonresident anglers made 13,500 trips to the Yukon in 1985, or about 2 trips per angler of which 68% were for fishing (Table 8). On average, they fished on one of these trips. For 59% of their fishing trips, fishing was a secondary reason for visiting the territory. Ninety-eight percent of their fishing trips to the territory lasted more than a day (the average length of an overnight fishing trip was 8 nights).

The use of accommodations appears to reflect the origins of the nonresident anglers. Approximately 19% of the time they stayed with friends and relatives; 28% of the time they stayed in tents or trailers; and 20% of the time they camped in territorial campgrounds.

Table 9. Relative importance of factors affecting fishing enjoyment in the Yukon in 1985.

Factors	Ranking Score		
	Resident	Nonresident	All Anglers
1. Beauty of Surroundings	14.3	14.5	14.4
2. Quality of Water	13.9	13.8	13.9
3. Escape Routine	11.2	10.9	11.0
4. Access to Wilderness	11.1	10.6	10.8
5. Privacy	10.2	10.5	10.3
6. Weather Conditions	11.0	9.5	10.2
7. Angling for Wild Fish	5.9	8.3	7.2
8. Number of Fish Caught	5.7	7.1	6.5
9. Catch Species Desired	6.7	6.0	6.3
10. Size of Fish Caught	4.8	5.9	5.4
11. Catch as a Source of Food	5.2	2.9	4.0

Residents and nonresidents alike listed the environment as the most important factor that contributed to their enjoyment of sport fishing in the Yukon. The natural beauty of the territory, the quality of the water, access to wilderness areas and weather conditions, were important components of the environment. Other important factors were, the ability to escape from work or household routine and privacy from other fishing parties. Anglers ascribed little importance to angling for wild (as opposed to hatchery) fish, number and size of fish caught, catching the desired species or to catching fish for food (Table 9).

In 1985, 40% of resident anglers also hunted big game in the Yukon. Seventeen percent hunted small game, while 19% hunted game birds (Table 10). Approximately 23% of licensed adult resident anglers were members of a national or territorial wildlife organization or local fish and game club; 840 anglers indicated membership in the Yukon Fish and Game Association, 412 indicated membership in the Canadian Wildlife Federation, and 255 indicated membership in a private club or association (Table 11).

Approximately 80% of active nonresident anglers indicated they would return to the Yukon to fish in the future, while only 10% said they would not return if sport fishing was no longer available in the territory (Tables 12 and 13). Overall, a majority of 57% of active nonresident anglers rated the quality of fishing in the Yukon as good to excellent; 18% rated the quality as fair, another 18% rated the quality as poor, and remaining 7% chose not to answer the question or had no opinion (Table 14).

Table 10. Wildlife related activities of Yukon residents in 1985.

Activity	%
Hunting –	
1. Big Game	39.6
2. Small Game	17.1
3. Wildlife Game Birds	19.0
4. Nature Photography	45.3
5. Bird Watching	30.0
6. Feeding Wildlife	12.9

Table 11. Membership organization of Yukon residents in 1985.

Organization	No.	%
Yukon Fish and Game Assoc.	840	12.6
Canadian Wildlife Fed.	412	6.2
Private Club or Assoc.	255	3.8

Table 12. Projected future participation of active nonresident anglers in the Yukon.

Return	Number	%
Yes	5,698	80.0
No	940	13.1
No opinion	494	6.9
Total	7,132	100.0

Table 13. Activities of active nonresident anglers if there were no fishing opportunities in the Yukon in 1985.

Activity	Number	%
Stay Shorter Time	1,671	23.4
Substitute Other Activities	4,255	59.7
Not Come at All	688	9.6
No opinion	518	7.3
Total	7,132	100.0

Table 14. Attitude of active nonresident anglers on quality of fishing in the Yukon in 1985.

Rating	Number	%
Excellent	984	13.8
Very Good	1,074	15.1
Good	2,012	28.2
Fair	1,272	17.8
Poor	1,279	17.9
No Opinion	511	7.2
Total	7,132	100.0

Expenditures and Investments

In 1985, anglers spent \$5.7 million in the Yukon on activities and supplies directly connected with their sport (Table 15). Residents spent a total of \$2.6 million, or an average of \$465 per active angler. Nonresidents spent \$3.1 million, or \$433 per active angler. Food, lodging and transportation accounted for 89% of the expenditures of resident anglers and 72% of the expenditures of nonresident anglers (Figure 6). Packages, which included the costs of aircraft, lodge facilities and charter boats, accounted for 19% of the nonresident expenditures.

Anglers in the Yukon invested \$5.9 million on major durables and property in 1985 (Table 16), of which \$3.3 million, or 57% was at-

tributed to sport fishing activities (Figure 7). The average investment of active resident anglers was \$1,009 and the average investment of active nonresidents was \$38. Ninety-five percent of the investments were made by resident anglers. Yukon residents, and nonresidents indicated that 57% and 52% respectively, of their purchases and investments were for sport fishing. Special vehicles (ATVs, snowmobiles, camper trucks, etc.) were popular items, accounting for \$2.3 million (40% of the investments), while boats and related equipment attracted another \$1.8 million.

Overall, anglers spent a total of \$11.5 million on goods and services in 1985, of which \$8.9 million, or 78% was directly attributable to sport fishing in the Yukon.

Table 15. Expenditures directly attributable to sport fishing in the Yukon in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Food and Lodging	1,004,655	1,258,023	2,262,678
Transportation	1,271,798	960,254	2,232,052
Fishing Services	46,418	142,919	189,337
Fishing Gear	222,480	91,170	313,650
Packages	17,672	586,367	604,039
Other	4,187	46,993	51,180
Total	2,567,210	3,085,726	5,652,936
Average Per Active Angler	464.57	432.66	466.59

Fig. 6. Proportion of expenditures attributable to sport fishing in the Yukon in 1985.

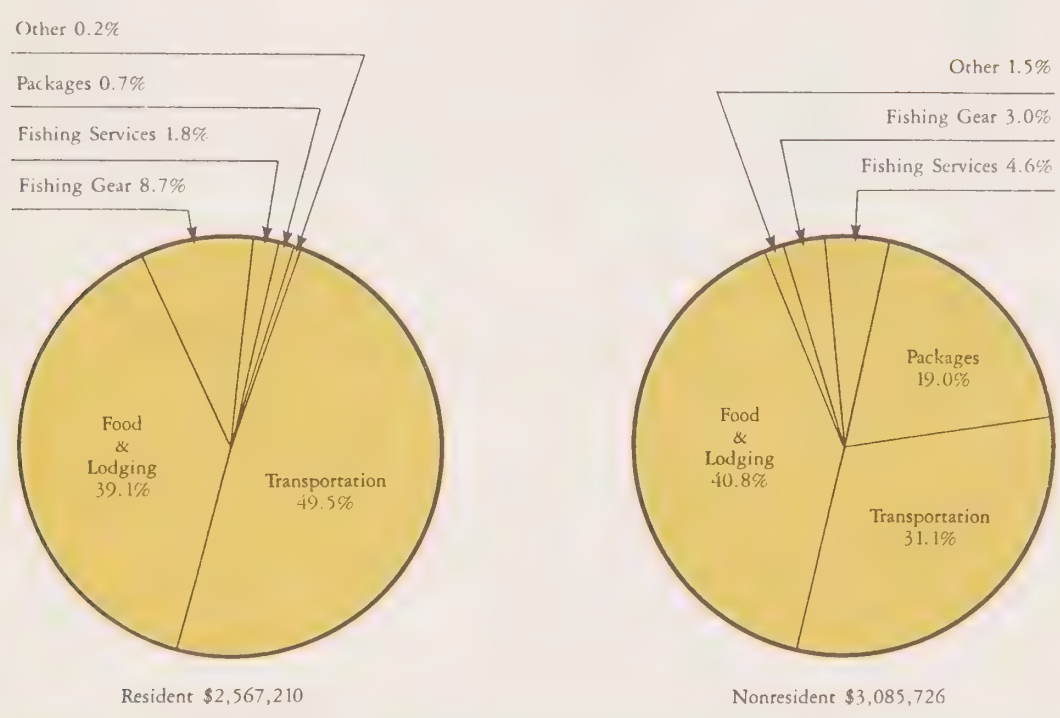
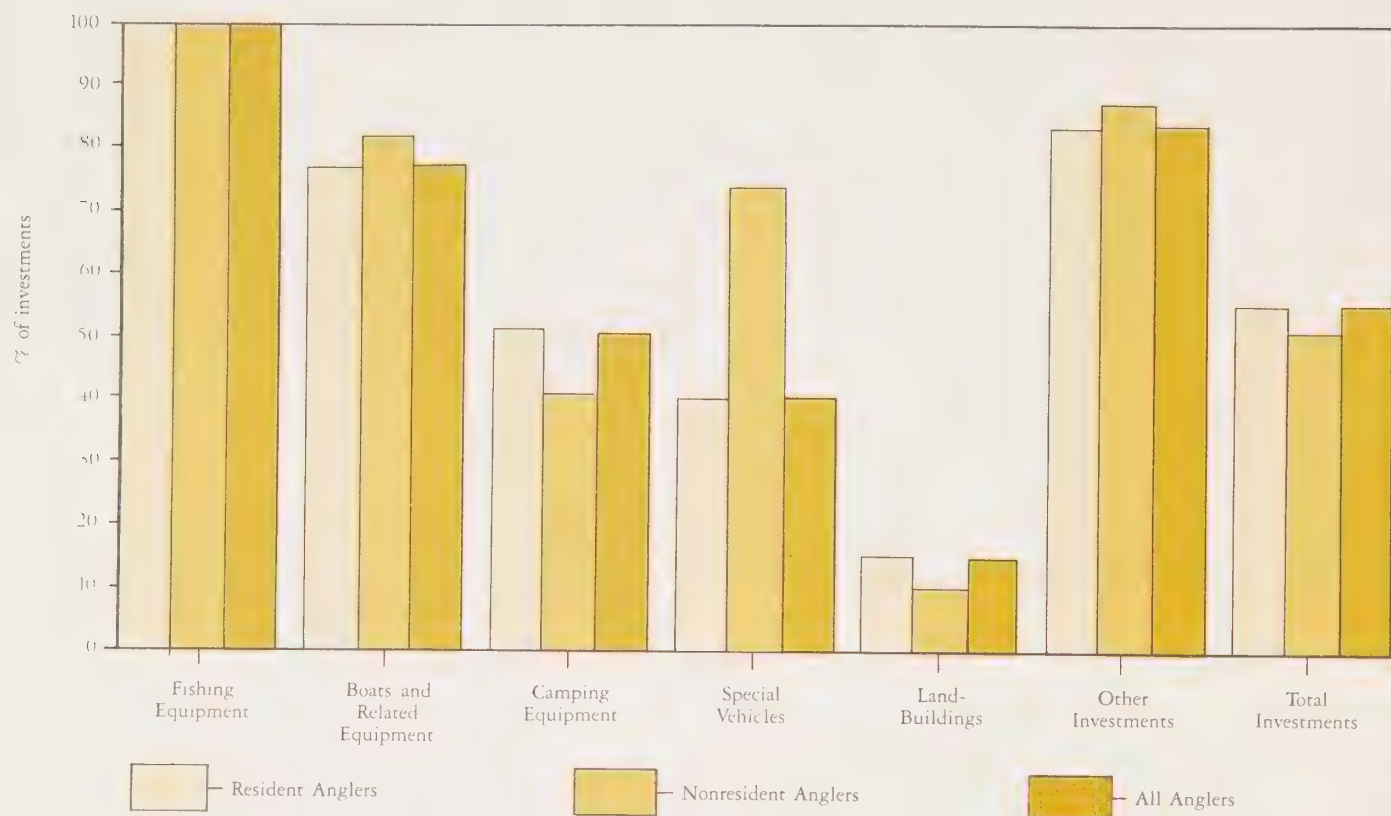


Table 16. Major purchases or investments relating in whole or in part to sport fishing in the Yukon in 1985.

Expenditures	Resident	Nonresident	Total
	\$	\$	\$
Fishing Equipment	338,085	46,144	384,229
Boats and Related Equipment	1,800,690	36,736	1,837,426
Camping Equipment	699,281	60,385	759,666
Special Vehicles (ATV's etc)	2,297,633	17,146	2,314,779
Land-Buildings	284,367	90,463	374,830
Other	156,648	23,128	179,776
Total	5,576,704	274,002	5,850,706
Average Per Active Angler	1,009.18	38.42	462.21
Total Attributable to Sport fishing	3,176,610	142,163	3,309,773
Average Per Active Angler	574.85	19.93	261.48

Fig. 7. Proportion of purchases or investments made by anglers in the Yukon attributable to sport fishing in 1985.



Willingness to Pay

Active anglers were asked "if your fishing costs had been higher in the Yukon in 1985 due to increased costs for gasoline, accommodation, supplies and other services, at what additional daily cost would you have decided not to fish?" Choices were given between \$1.00 and \$100.00

per day and the results are shown in Table 17. Thirty-one percent indicated they were not willing to pay any additional costs, 58% would have stopped fishing when their additional daily costs reached \$10, 75% would have stopped fishing when their additional daily costs

reached \$20, 83% when they reached \$30, 86% when they reached \$40, 94% when they reached \$50, and all anglers would have stopped fishing when their additional daily costs reached \$100. When extrapolating the results on an annual basis to all active anglers, the

Table 17. Willingness of active anglers to pay additional costs for fishing in the Yukon in 1985.

Additional cost per day	Resident	Nonresident	Total
	%	%	%
\$0.00	27.3	34.6	31.3
\$1.00	28.6	36.1	32.7
\$2.00	29.1	36.9	33.4
\$3.00	30.0	39.1	35.0
\$4.00	30.9	39.8	35.8
\$5.00	38.0	45.2	42.0
\$7.50	38.5	47.6	43.5
\$10.00	52.8	61.5	57.6
\$20.00	71.8	77.7	75.0
\$30.00	82.3	84.2	83.3
\$40.00	84.4	86.5	85.8
\$50.00	91.9	95.7	94.0
\$100.00	100.0	100.0	100.0
Additional Annual Amount ('000)	\$2,547.6	\$528.9	\$3,076.5

total additional amount anglers indicated they were willing to pay to go sport fishing in the Yukon in 1985 was approximately \$3.1 million in excess of the \$5.7 million they already spent.

Comparison of 1980 Results

Licence sales in the Yukon were down by 11% in 1985 and subsequently the total number of active anglers decreased by 10%. While resident licence sales decreased by only 5%, the number of nonresident licences sold dropped by 15% from 9,829 licences sold in 1980 to 8,349 in 1985, a difference of 1,480 licences.

Both resident and nonresident anglers fished fewer days in the Yukon in 1985. Nonresidents reduced their fishing activity by 28%, spending approximately 36,000 days fishing in 1985 as compared to 50,000 days in 1980. Residents fished approximately 17,000 fewer days in 1985, resulting in a 16% decrease.

The total harvest of all species combined was down by 36% from approximately 170.6 thousand fish caught and retained in 1980 to 108.7 thousand in 1985.

Direct expenditures by all licensed anglers in the Yukon were 37% higher in 1985, from \$4.1 million spent in 1980 to \$5.7 million in 1985. The major purchase and investment category increased by 78% and likewise, the amount of purchases and investments which were totally attributable to sport fishing was up 96%, but some of this difference was likely due to different wording of the question with a broader range of suggested categories in 1985.

Conclusions

The results of the 1985 survey of sport fishing in the Yukon confirm that it is a significant form of outdoor recreation and an important socio-economic component of the natural resource sector in the territory. It is estimated anglers spent \$5.7 million on activities directly associated with sport fishing. These included expenditures for accommodation, food, travel, bait, licences, etc. Additionally, anglers invested \$5.9 million on major durables and property, of which \$3.3 million was used for sport fishing. In all, anglers invested a

total of \$11.5 million in 1985, of which \$8.9 million was directly attributed to sport fishing in the Yukon.

Economists generally agree that the first round of expenditures in most segments of the business world do not adequately reflect the full impact on spending as described above. As money circulates into associated businesses, the economic effect increases by a factor of 1.5 or more. On this basis, the direct economic impact on sport fishing within the Yukon was \$13.4 million or greater in 1985.

Anglers also indicated they were prepared to spend an additional \$3.1 million in total above their current costs in 1985 before they would stop fishing. Although this information has not yet been taken into consideration in addressing the total value of the fishery, it does indicate that anglers place more value on the resource than they currently spend.

Overall, 12,658 adults fished for sport in the Yukon in 1985. More than 5,526 of these active adult

Table 18. 1980-1985 comparisons of angler characteristics, days fished, species harvest and expenditures in the Yukon.

	Resident			Nonresident			Total		
	1980	1985	% Change	1980	1985	% Change	1980	1985	% Change
Total Licensed Angling Population	7,246	6,862	-5.3%	9,829	8,349	-15.1%	17,075	15,211	-10.9%
Total Active Adult Anglers	5,991	5,526	-7.8%	8,062	7,132	-11.5%	14,053	12,658	-9.9%
Total Days Fished ('000)	103.8	87.2	-16.0%	50.1	36.1	-27.9%	153.9	123.3	-19.9%
Total Fish Caught and Retained ('000)	111.3	70.8	-36.4%	59.3	37.9	-36.1%	170.6	108.7	-36.3%
Total Direct Expenditures ('000)	\$1,415.6	\$2,567.2	81.4%	\$2,710.8	\$3,085.7	13.8%	\$4,126.4	\$5,652.9	37.0%
Major Purchases and Investments ('000)	\$3,188.3	\$5,576.7	75.0%	\$97.3	\$274.0	181.6%	\$3,285.6	\$5,850.7	78.1%
Total Attributable to Sport fishing ('000)	\$1,624.9	\$3,176.6	95.5%	\$68.6	\$142.2	107.3%	\$1,693.5	\$3,318.8	96.0%

anglers were residents of the territory. Based on the population estimate of 16,600* individuals 16 years of age and over, one resident in three fished in 1985. Anglers fished a total of 123,300 days in 1985, and they harvested 108,712 fish of all species. These fish weighed 139,387 kilograms or 307,350 pounds.

Yukon anglers indicated they were more concerned about the fishing ex-

perience than they were about catching fish. They rated natural beauty of the territory and quality of the water as the two most important factors, while size and number of fish were rated eight and ten respectively. Although fish provide the focus for angling activity, other elements must be considered by managers in order to provide a greater recreational fishing experience.

In summary, the average Yukon

angler in 1985 was 42 years old, strongly preferred to fish for Arctic grayling and lake trout, and felt that natural beauty of surroundings and quality of water were the most important factors influencing a day's fishing. This average angler fished 10 days while spending \$731 and catching 18 fish. Approximately 9 of these fish, weighing a total of 24 pounds (11 kilograms) were kept.

* Statistics Canada – Postcensal Annual Estimates of Population, June 1985 – Volume 3.

Near Carcross, Yukon



Department of Regional Industrial Expansion Photo

Surveys Unit
Economic and Commercial
Analysis Directorate
Department of Fisheries and
Oceans
Ottawa, Ontario K1A 0E6

Fish and Wildlife Branch
Department of Renewable Resources
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Y1A 2C6

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"Sport Fishing in the Yukon, 1985"
Communications Directorate
Department of Fisheries and Oceans
200 Kent Street, 14th Floor
Ottawa, Ontario
K1A 0E6

or

"Sport Fishing in the Yukon, 1985"
Fish and Wildlife Branch
Department of Renewable Resources
10 Burns Road (P.O. Box 2703)
Whitehorse, Yukon
Y1A 2C6

